Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 40: October 2 – October 8, 2016

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Sporadic[2].
- A season-to-date total of 29 laboratory-positive[3] influenza cases (11 influenza A, 15 influenza B, and three untyped) have been reported in Missouri as of Week 40. The influenza type for reported cases season-to-date includes 38% influenza A, 52% influenza B, and 10% untyped. Two laboratory-confirmed cases of influenza B (B/Victoria) were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 40.
- Influenza-like illness activity is below baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 1.20% and 0.72% through ILINet and ESSENCE respectively.[4]
- No influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 39, 55 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 55 P&I associated deaths in Missouri.[5]
- No influenza or ILI-associated outbreaks or school closures have been reported in Missouri, to date, this influenza season.
- National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Sporadic is defined as: Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2e6kJ5Z . *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 40**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 40**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 40 (October 2 – October 8, 2016)

Influenza Type	Week 40	2016-2017* Season-to-Date
Influenza A	11	11
Influenza B	15	15
Influenza Unknown Or Untyped	3	3
Total	29	29

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 40 (October 2 – October 8, 2016)

Age Group	Week 40 Cases	Week 40 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	4	1	4	1
05-14	10	1	10	1
15-64	14	0	14	0
65+	1	0	1	0
Total	29	0	29	0

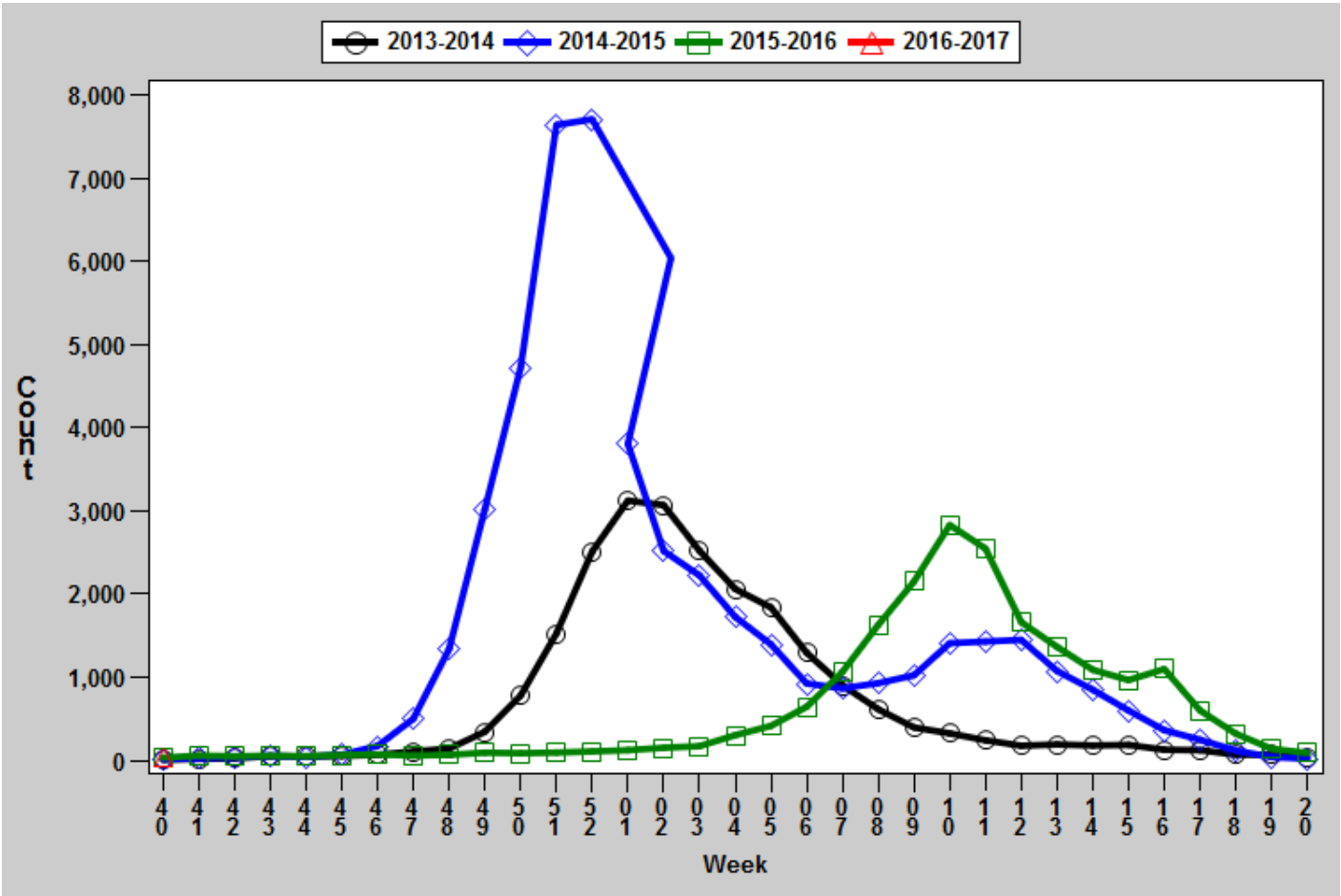
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 40 (October 2 – October 8, 2016)

District	Week 40 Cases	Week 40 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	1	0	1	0
EA	2	0	2	0
NW	7	0	7	0
SE	17	4	17	4
SW	2	0	2	0
Total	29	0	29	0

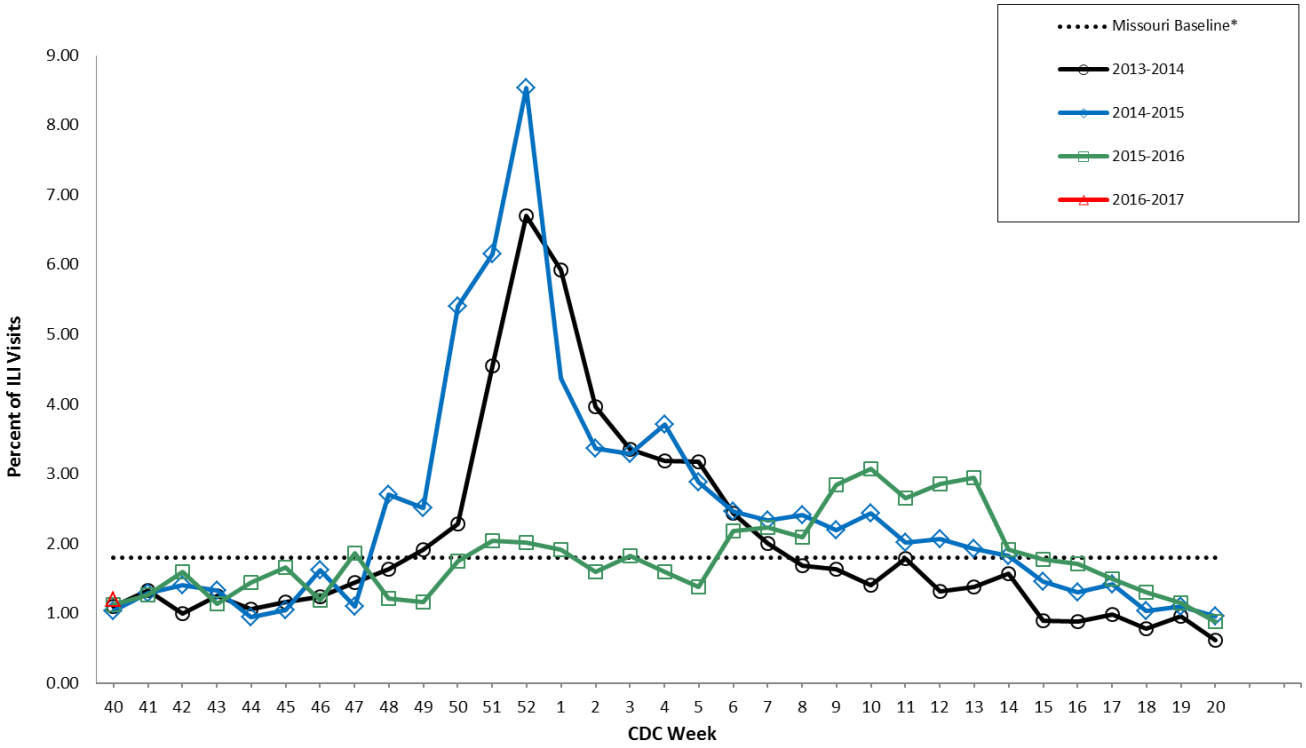
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*



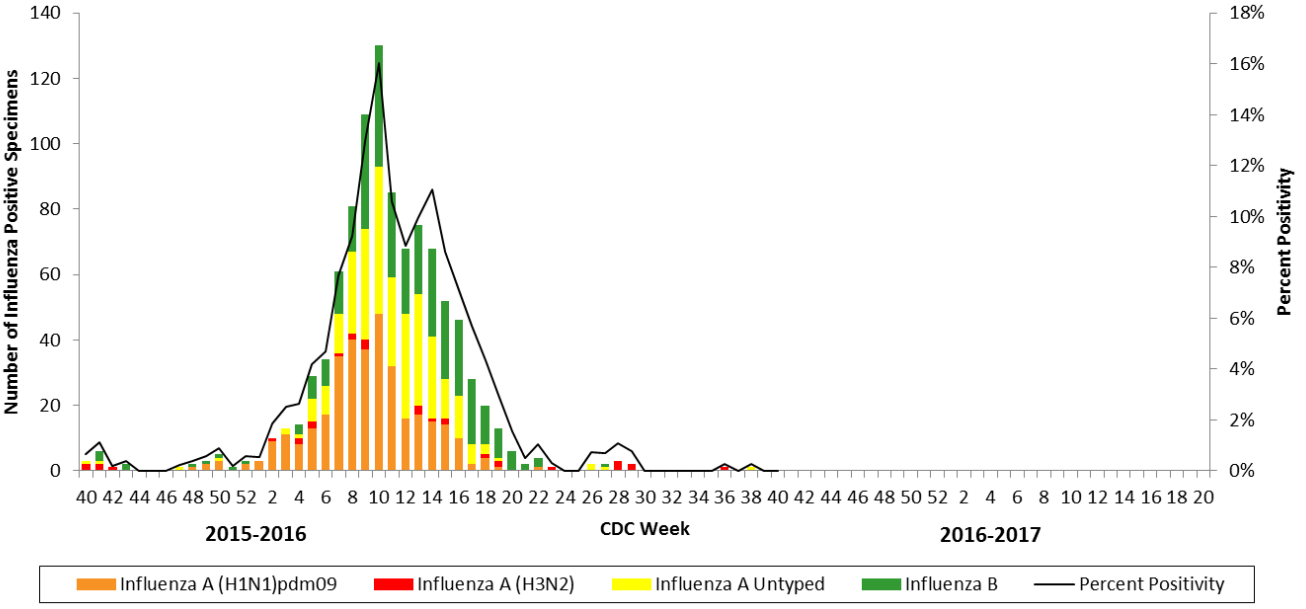
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



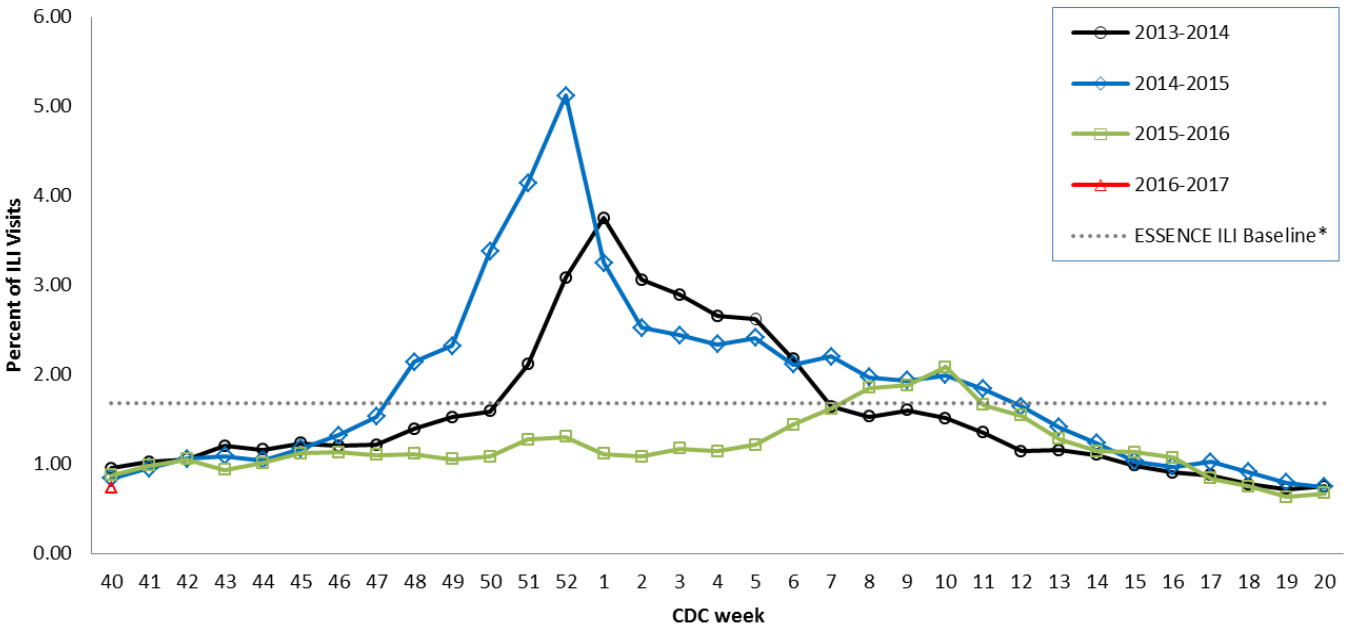
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network, Centers for Disease Control and Prevention (CDC).
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



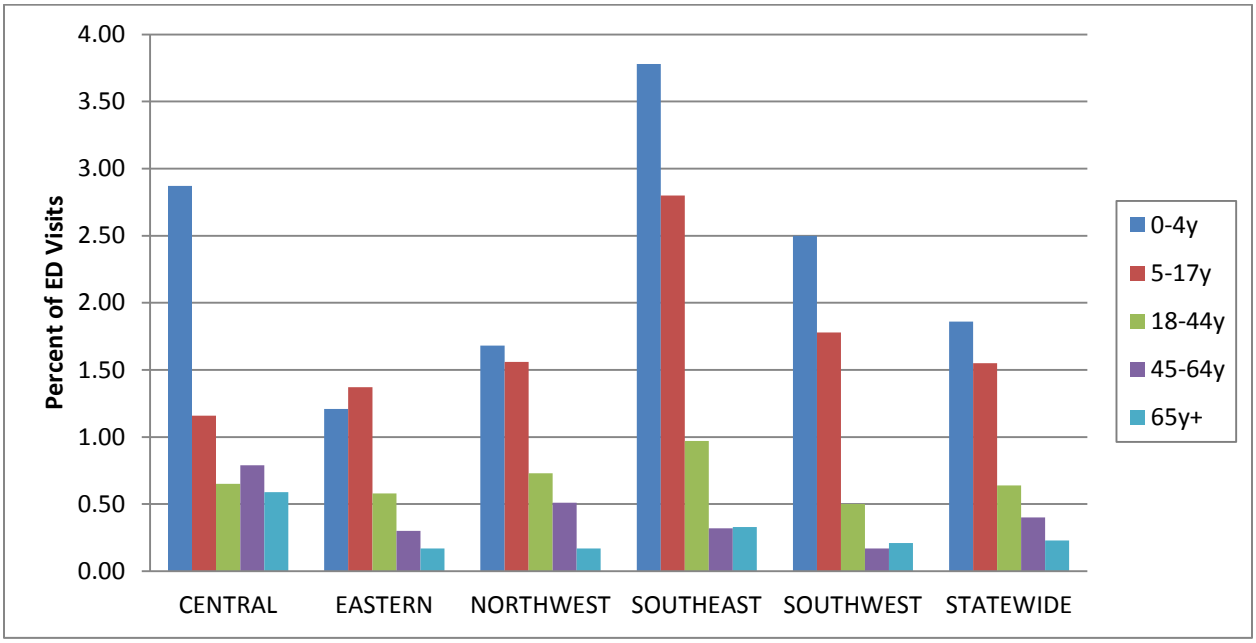
Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons



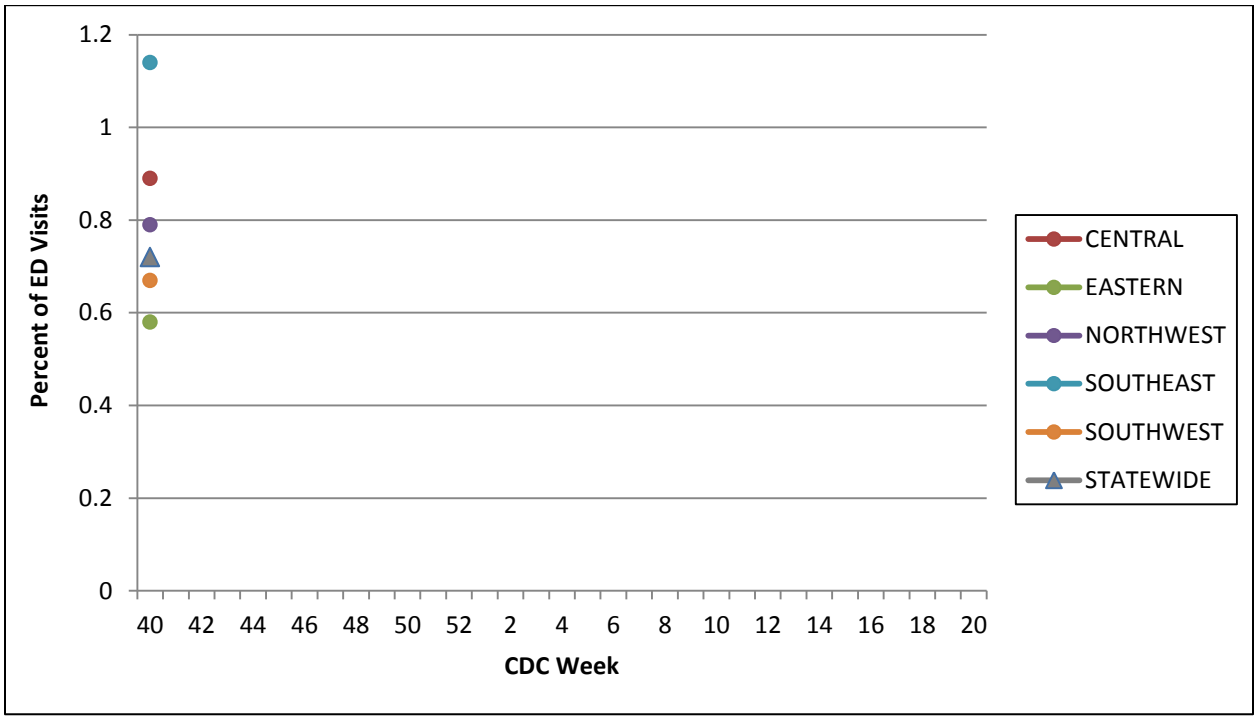
*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 40, 2016



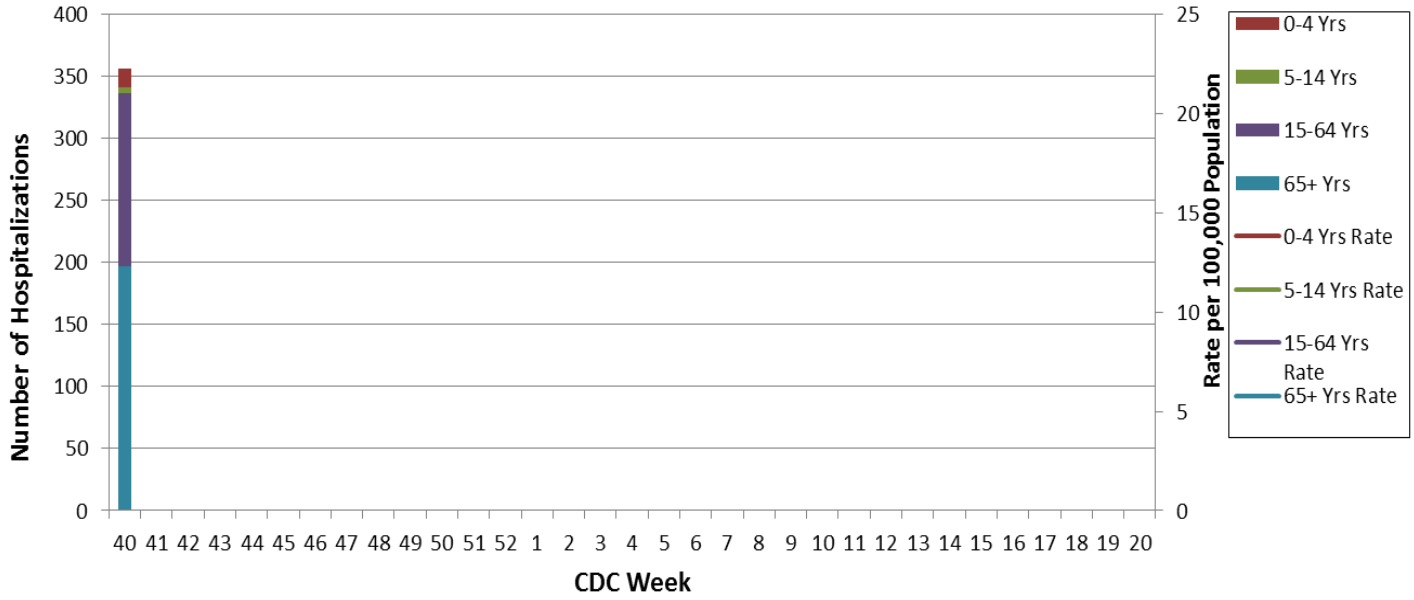
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 40, 2016



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 41: October 9 – October 15, 2016

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Sporadic[2].
- A season-to-date total of 63 laboratory-positive[3] influenza cases (27 influenza A, 32 influenza B, and four untyped) have been reported in Missouri as of Week 41. The influenza type for reported cases season-to-date includes 43% influenza A, 51% influenza B, and 6% untyped. Thirty-one laboratory-positive[3] influenza cases (15 influenza A, 16 influenza B) were reported during Week 41. No laboratory-confirmed cases of influenza were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 41.
- Influenza-like illness (ILI) activity is below baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 1.38% and 0.86% through ILINet and ESSENCE respectively.[4]
- No influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 40, 46 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 101 P&I associated deaths in Missouri.[5]
- No influenza or ILI-associated outbreaks or school closures have been reported in Missouri, to date, this influenza season.
- Influenza activity was low in the U.S. during Week 40. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Sporadic is defined as: Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2ekP4ho. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 41**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 41**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 41 (October 9 – October 15, 2016)

Influenza Type	Week 40	Week 41	2016-2017* Season-to-Date
Influenza A	12	15	27
Influenza B	16	16	32
Influenza Unknown Or Untyped	4	0	4
Total	32	31	63

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 41 (October 9 – October 15, 2016)

Age Group	Week 41 Cases	Week 41 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	3	1	7	2
05-14	3	0	13	2
15-64	21	1	37	1
65+	4	0	6	1
Total	31	1	63	1

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 41 (October 9 – October 15, 2016)

District	Week 41 Cases	Week 41 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	8	1	12	2
EA	7	0	9	0
NW	10	1	17	1
SE	5	1	22	5
SW	1	0	3	0
Total	31	1	63	1

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
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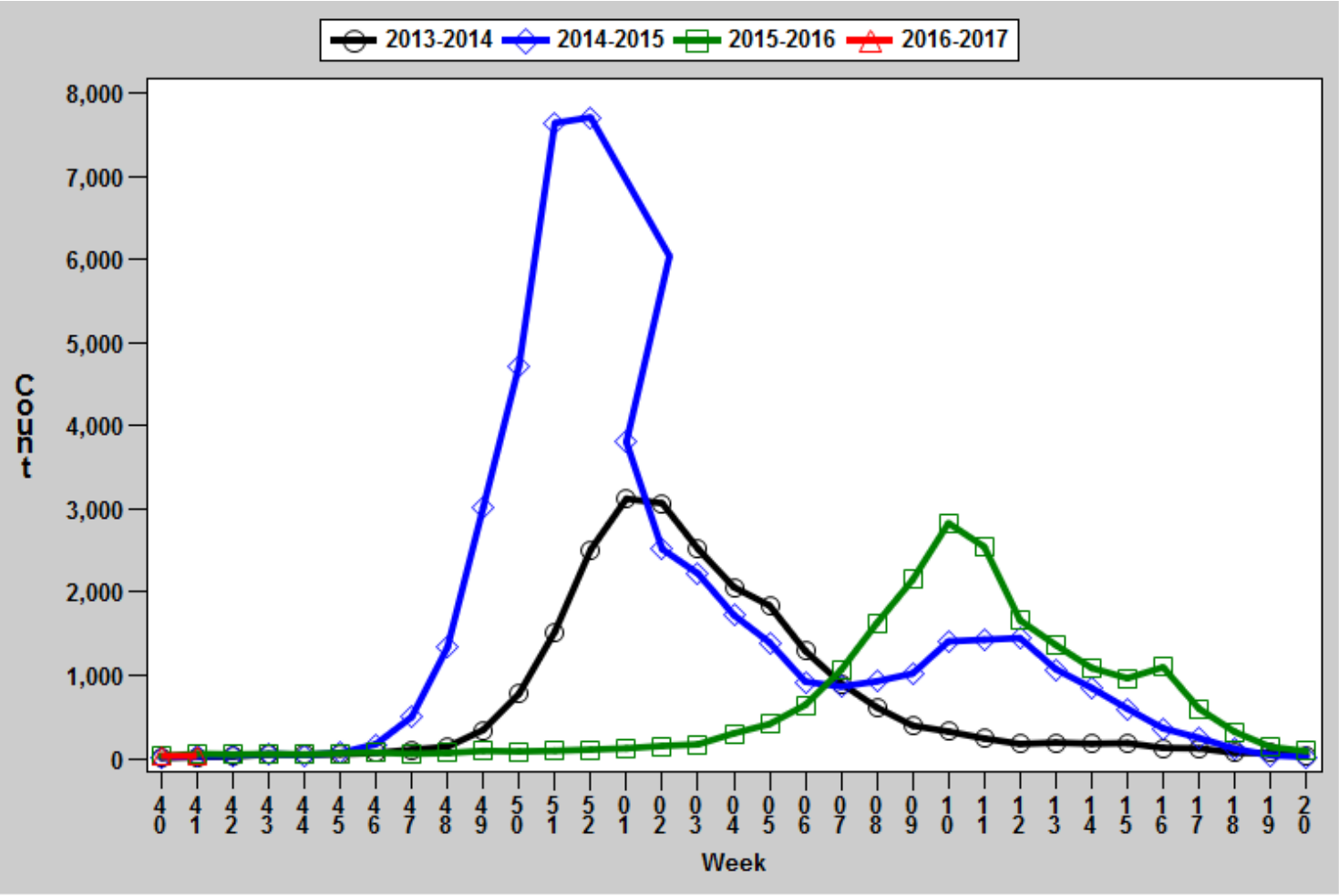

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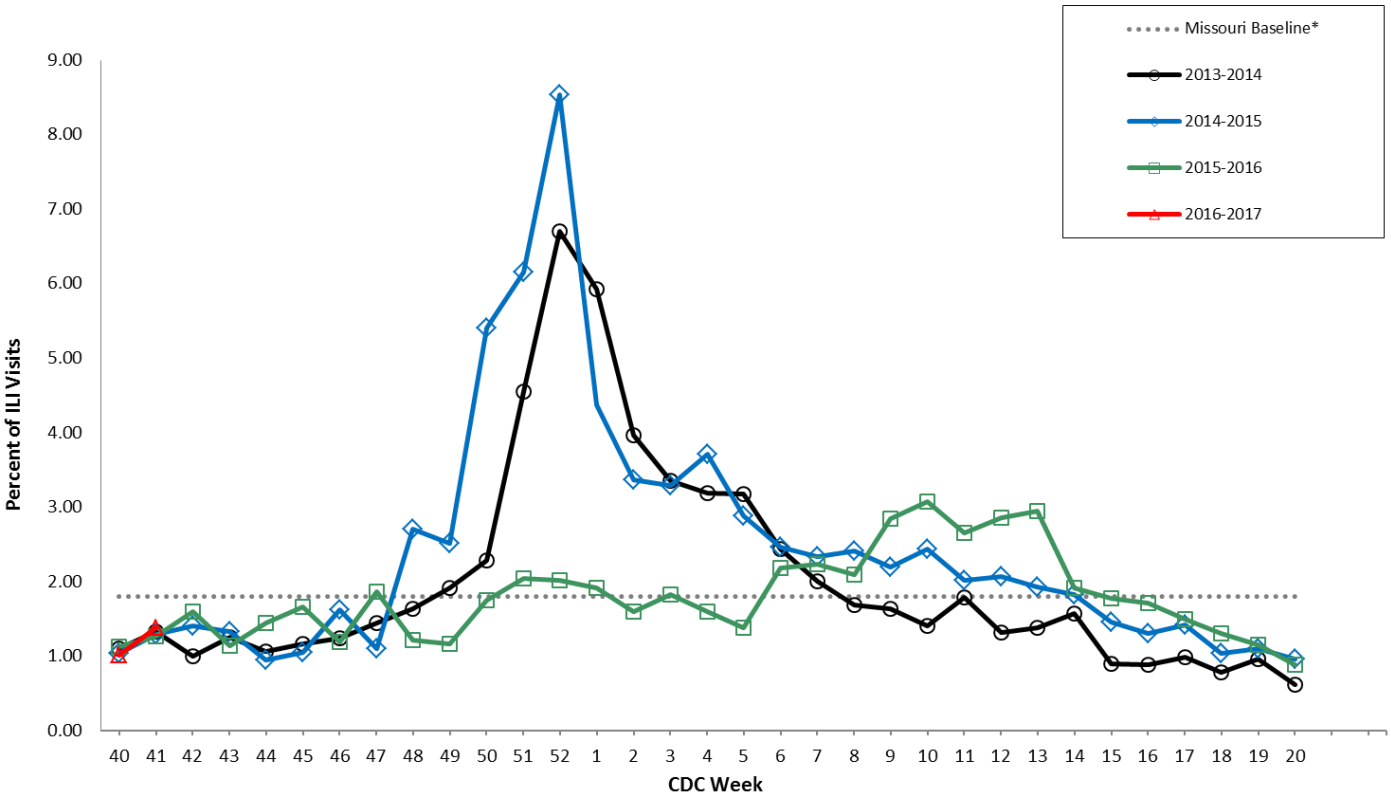
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

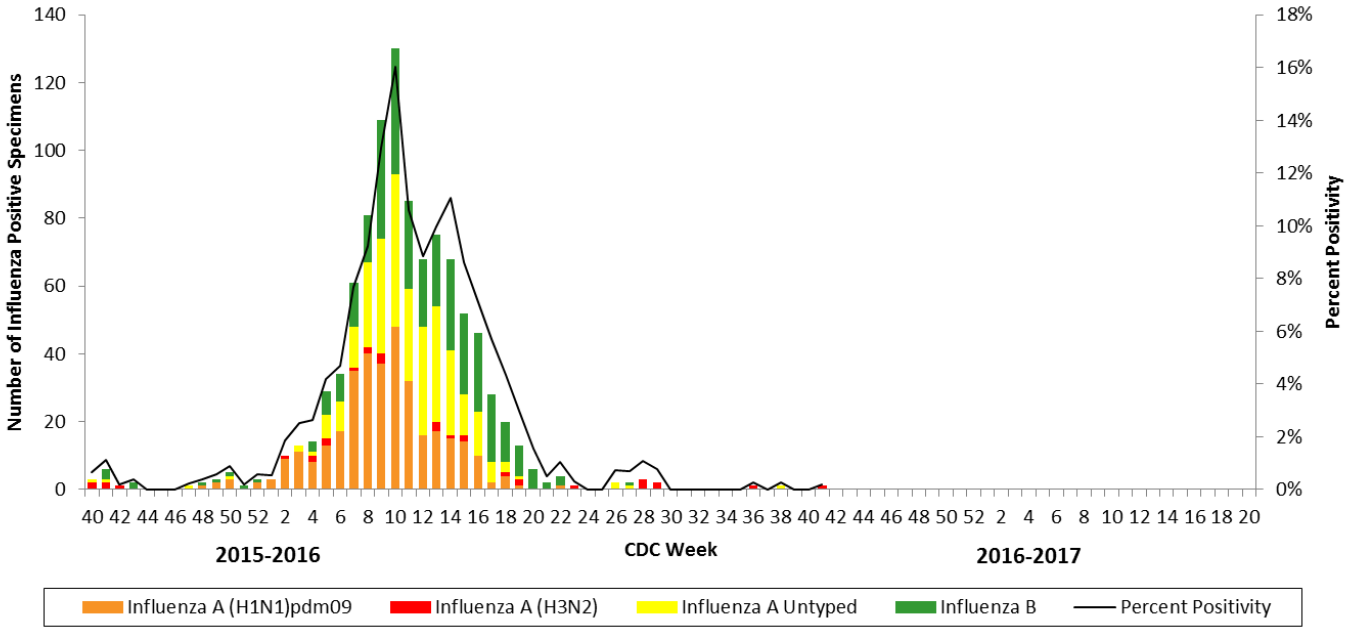
Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network, Centers for Disease Control and Prevention (CDC).

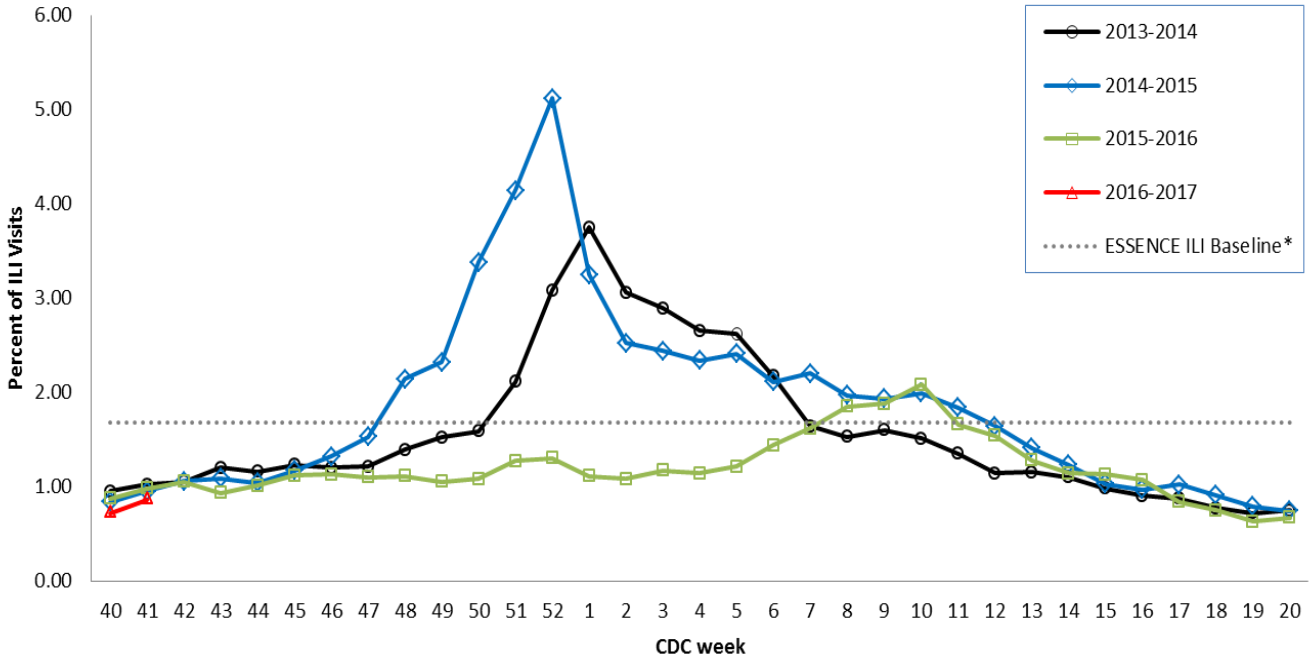
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



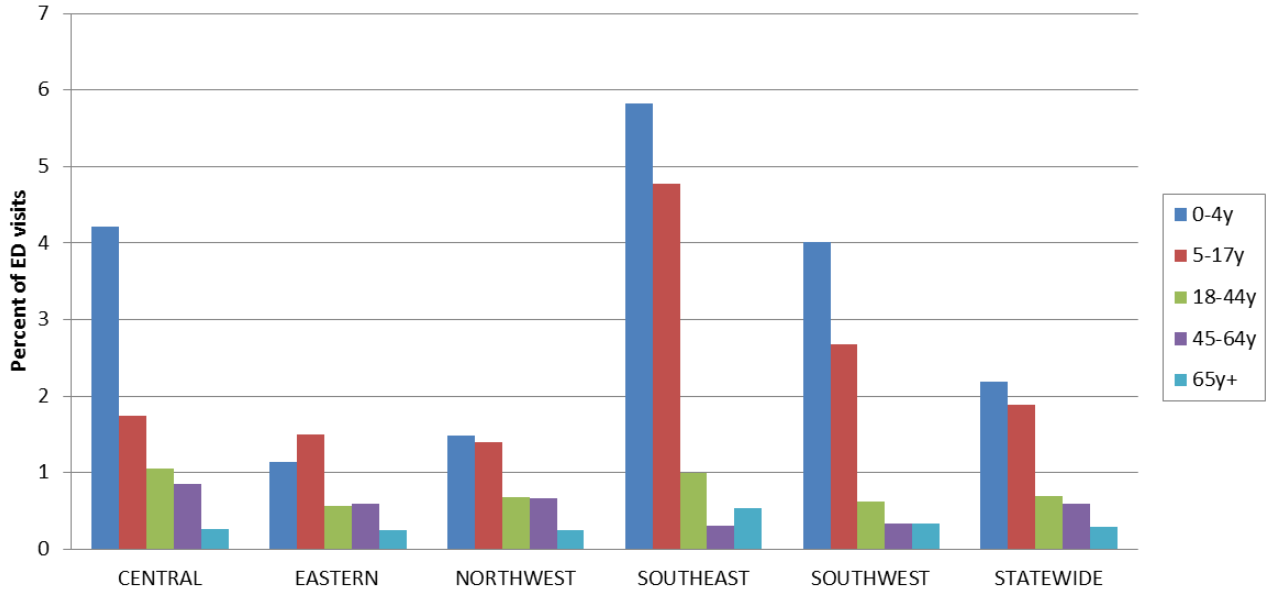
Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons



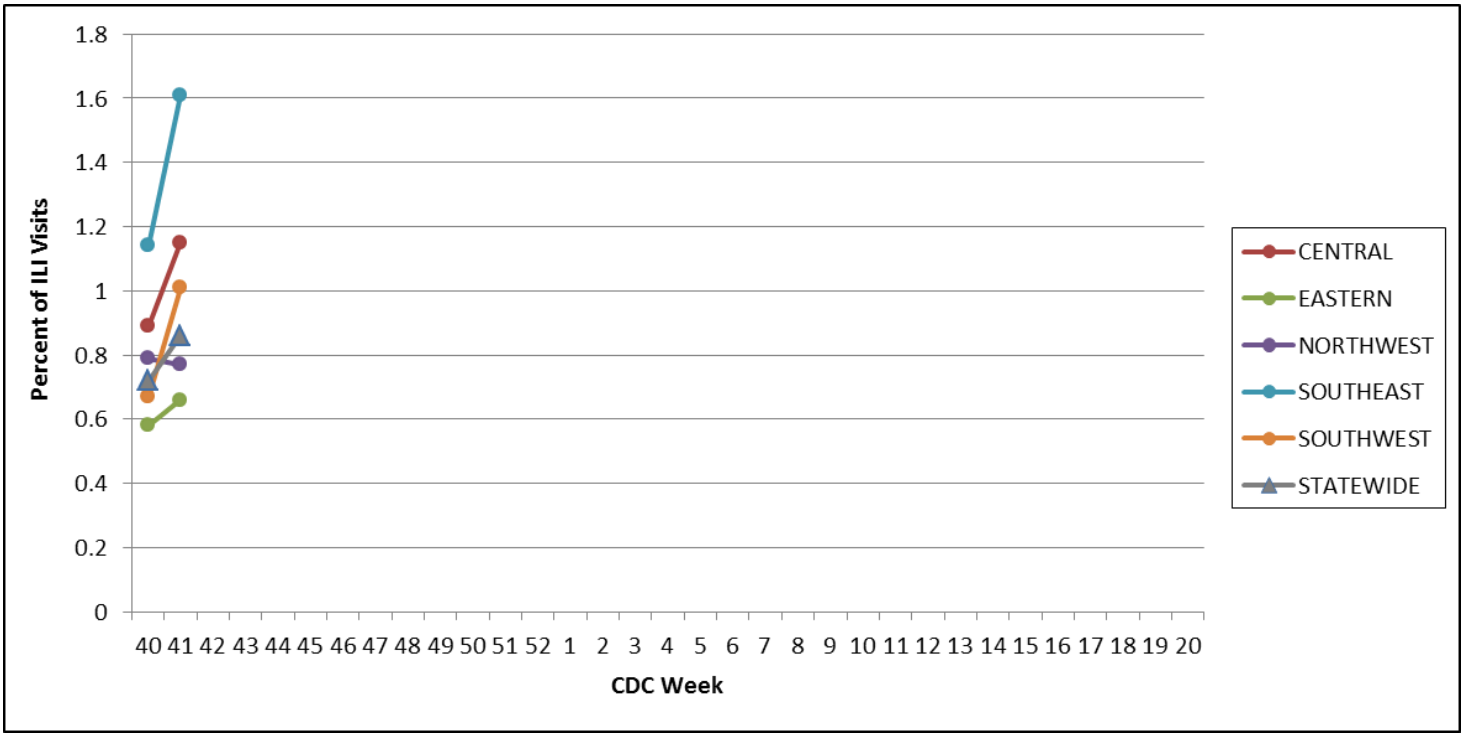
*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 41, 2016



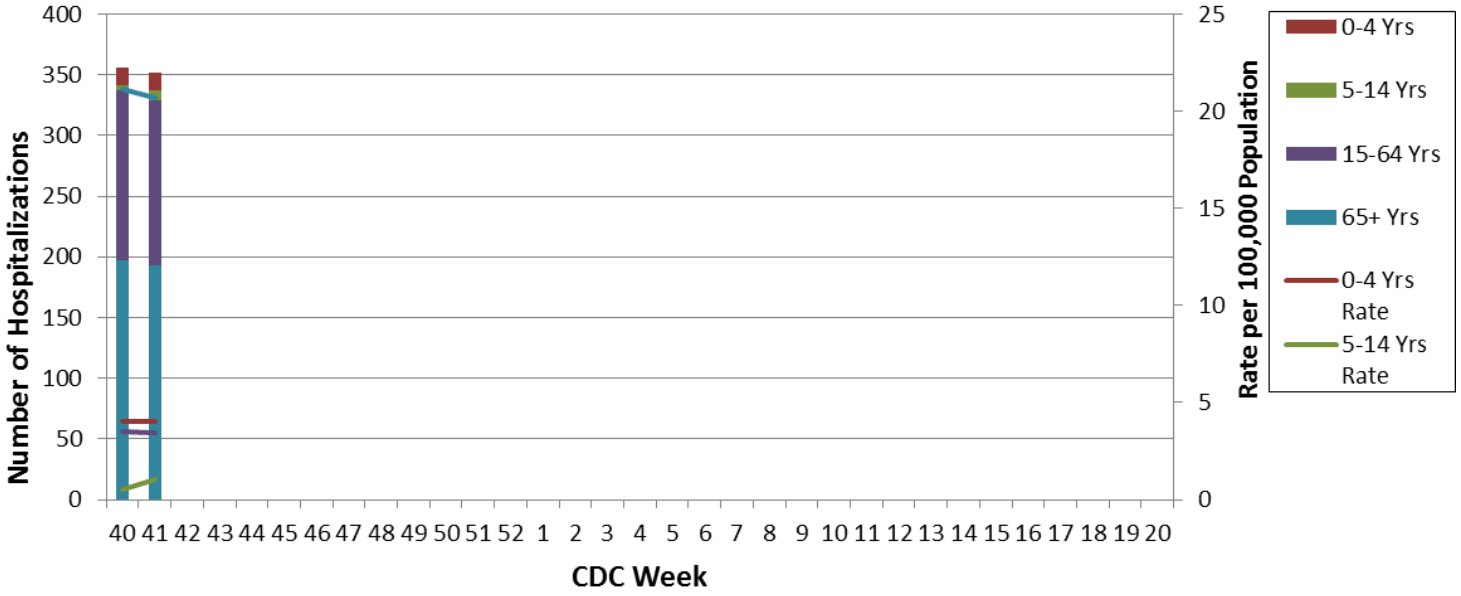
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 41, 2016



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 42: October 16 – October 22, 2016

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Sporadic[2].
- A season-to-date total of 91 laboratory-positive[3] influenza cases (42 influenza A, 42 influenza B, and seven untyped) have been reported in Missouri as of Week 42. The influenza type for reported cases season-to-date includes 46% influenza A, 46% influenza B, and 8% untyped. Nineteen laboratory-positive[3] influenza cases (nine influenza A, eight influenza B, two untyped) were reported during Week 42. No laboratory-confirmed cases of influenza were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 42.
- Influenza-like illness (ILI) activity is below baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 1.38% and 0.81% through ILINet and ESSENCE respectively.[4]
- No influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 41, 47 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 148 P&I associated deaths in Missouri.[5]
- No influenza or ILI-associated outbreaks or school closures have been reported in Missouri, to date, this influenza season.
- Influenza activity was low in the U.S. during Week 41. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Sporadic is defined as: Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2dIEgsn. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 42**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 42**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 42 (October 16 – October 22, 2016)

Influenza Type	Week 40	Week 41	Week 42	2016-2017* Season-to-Date
Influenza A	13	20	9	42
Influenza B	16	18	8	42
Influenza Unknown Or Untyped	4	1	2	7
Total	33	39	19	91

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 42 (October 16 – October 22, 2016)

Age Group	Week 42 Cases	Week 42 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	2	1	11	3
05-14	4	1	20	3
15-64	11	0	52	1
65+	2	0	8	1
Total	19	0	91	2

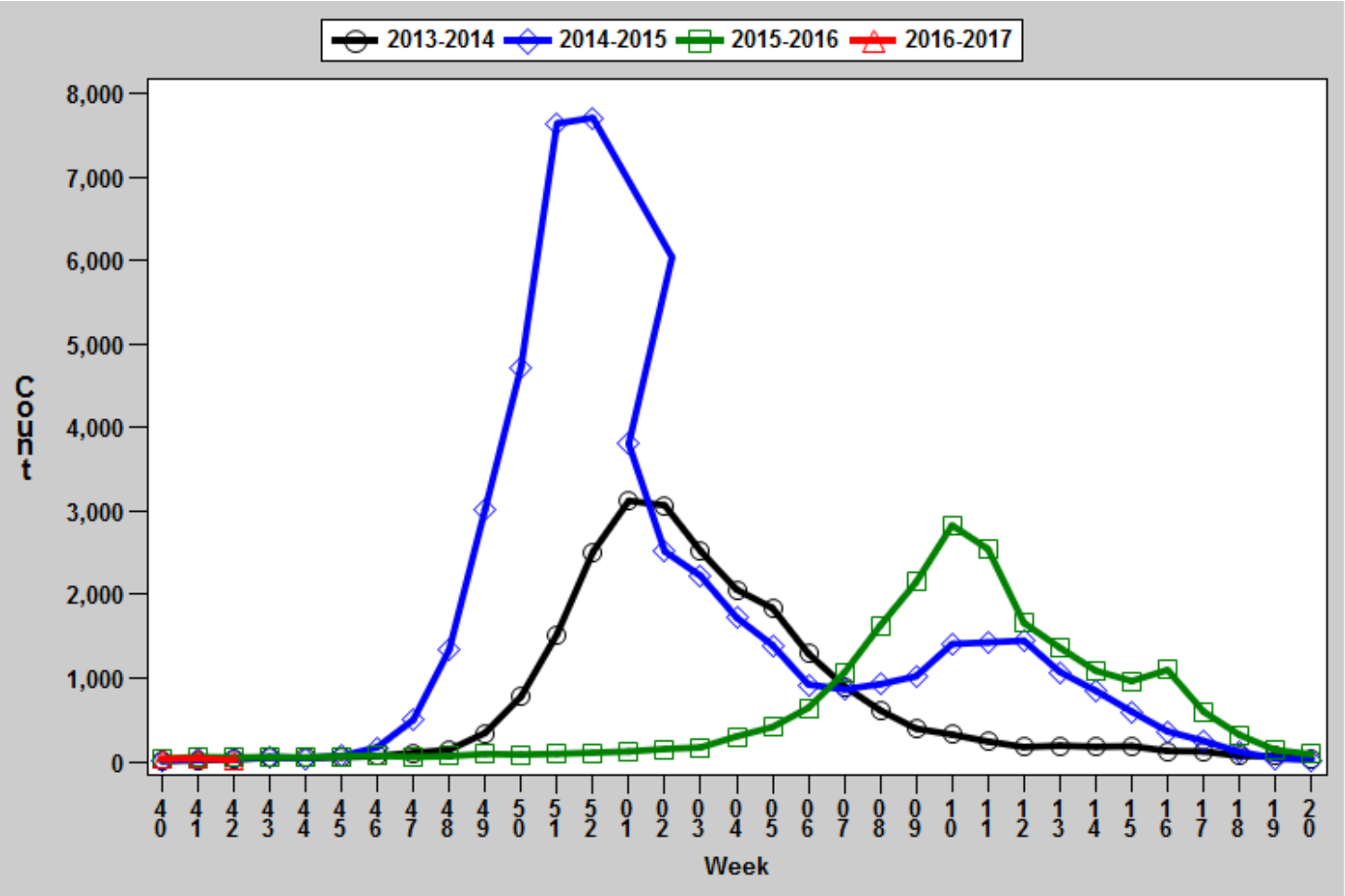
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 42 (October 16 – October 22, 2016)

District	Week 42 Cases	Week 42 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	0	0	12	2
EA	5	0	14	1
NW	6	0	27	2
SE	6	1	28	6
SW	2	0	10	1
Total	19	0	91	2

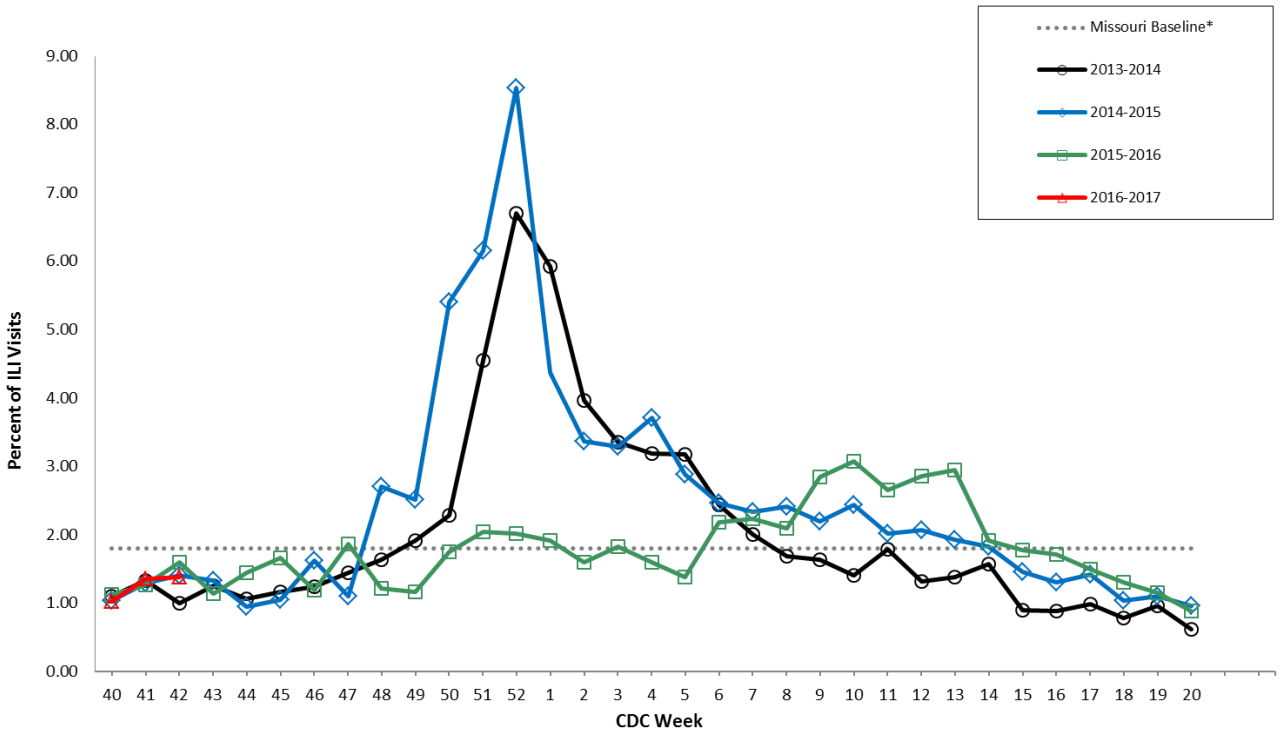
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*



†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†

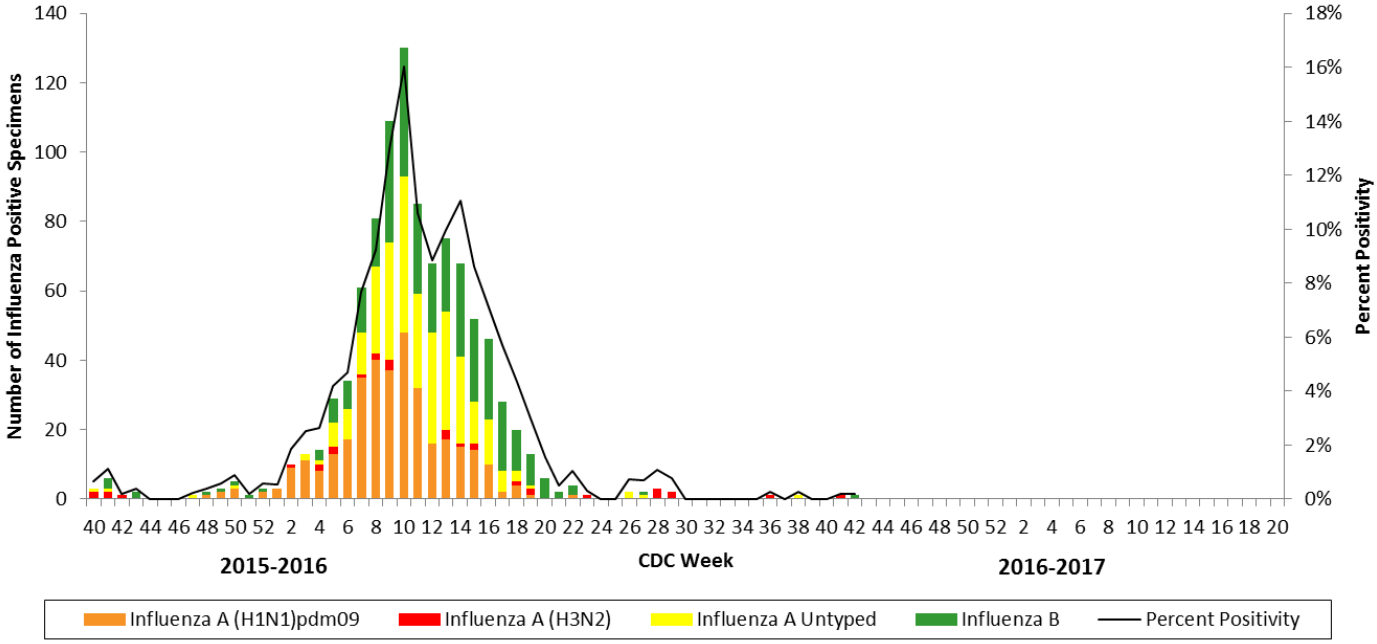


*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.

Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network, Centers for Disease Control and Prevention (CDC).

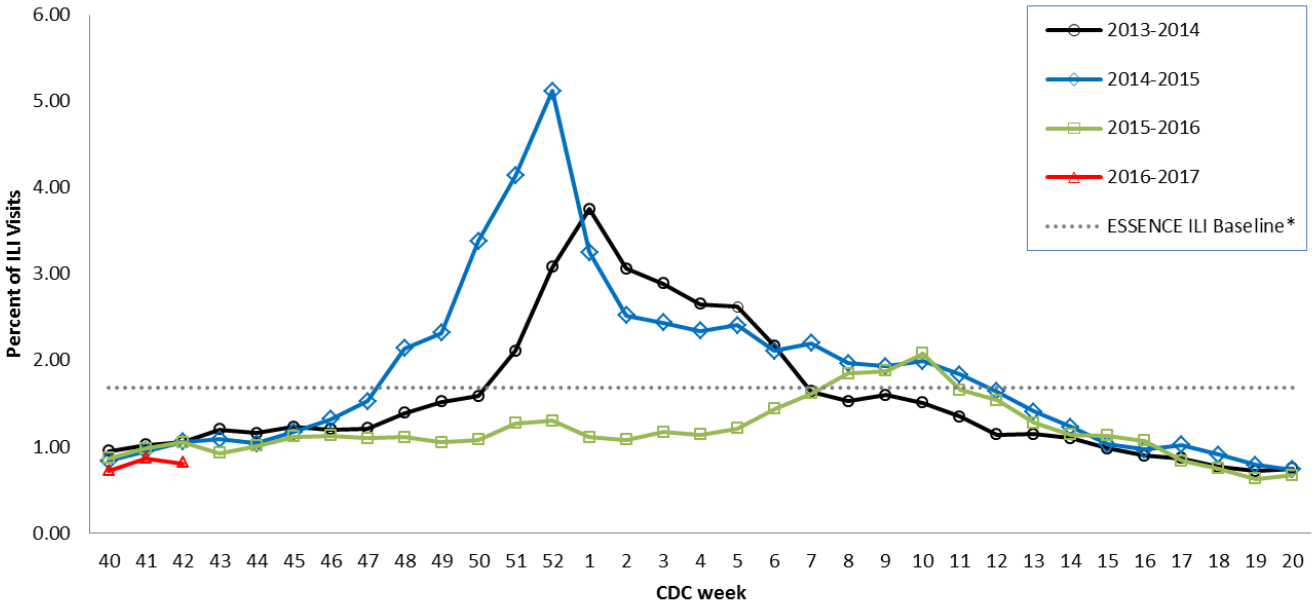
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



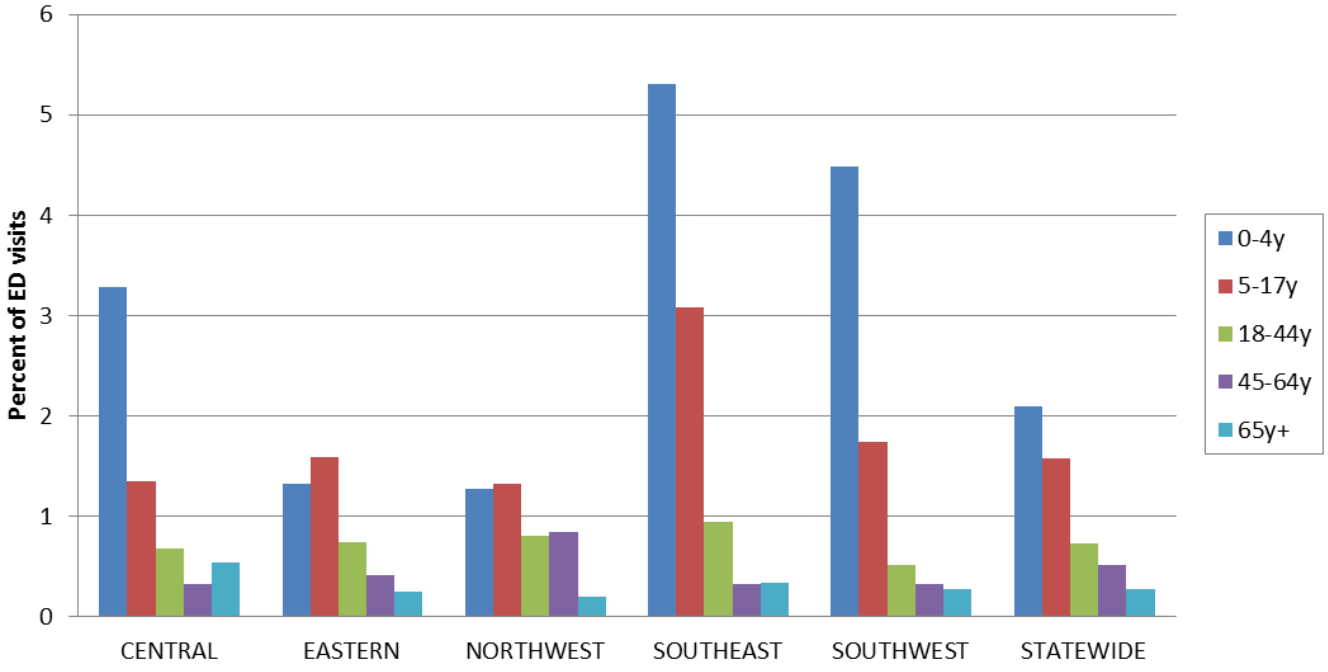
Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons



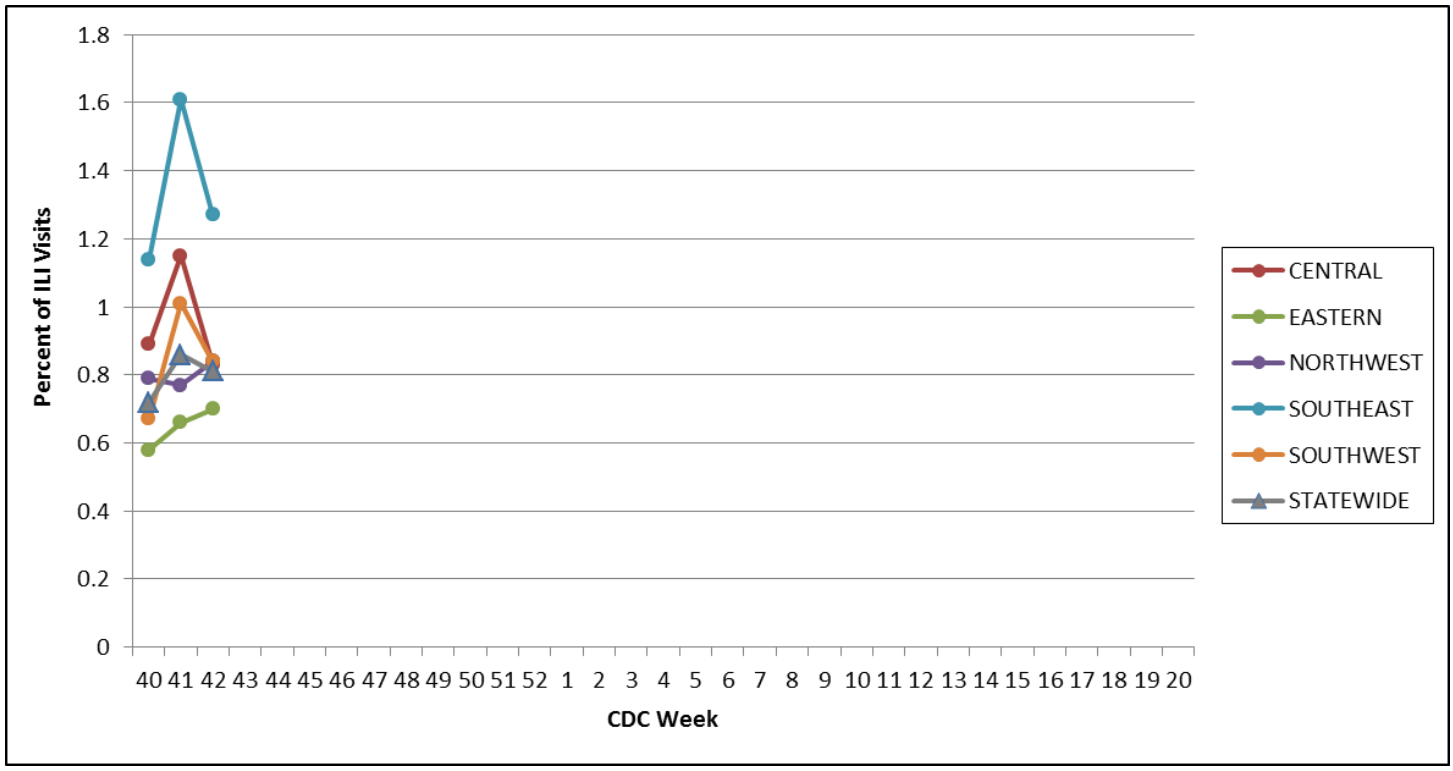
*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 42, 2016



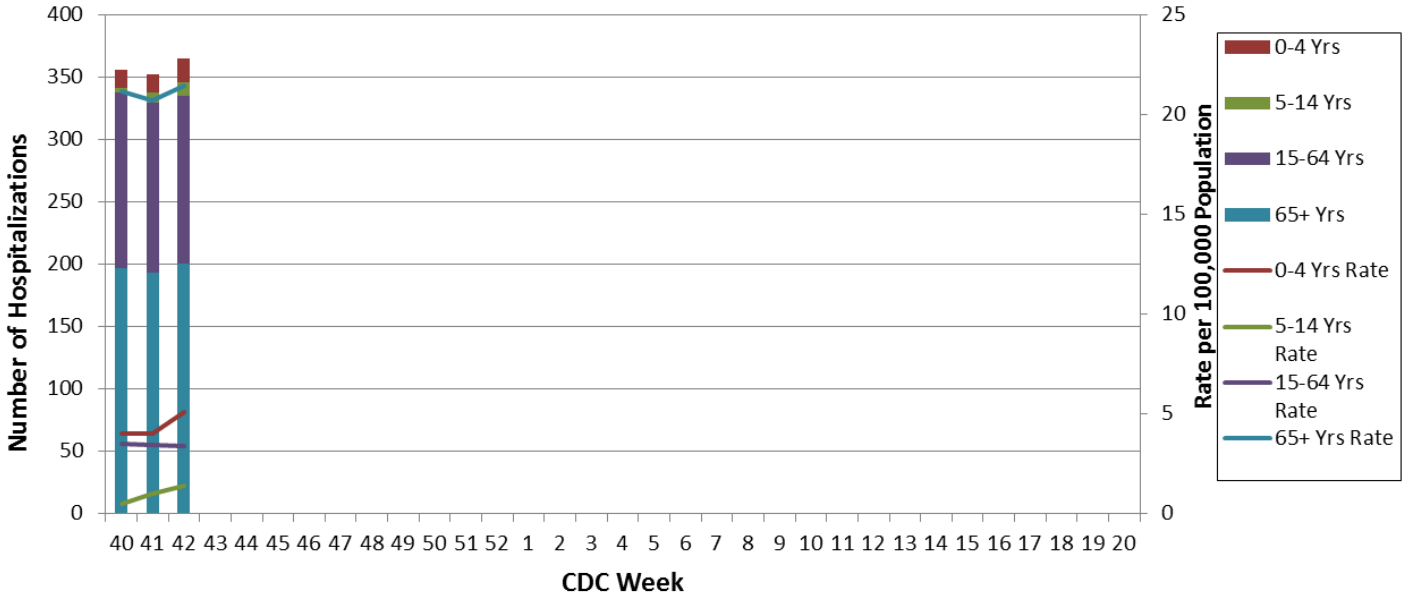
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 42, 2016



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 43: October 23 – October 29, 2016

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Sporadic[2].
- A season-to-date total of 161 laboratory-positive[3] influenza cases (84 influenza A, 69 influenza B, and eight untyped) have been reported in Missouri as of Week 43. The influenza type for reported cases season-to-date includes 52% influenza A, 43% influenza B, and 5% untyped. Thirty laboratory-positive[3] influenza cases (14 influenza A, 16 influenza B) were reported during Week 43. No laboratory-confirmed cases of influenza were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 43.
- Influenza-like illness (ILI) activity is below baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 1.21% and 0.92% through ILINet and ESSENCE respectively.[4]
- No influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 42, 52 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 200 P&I associated deaths in Missouri.[5]
- No influenza or ILI-associated outbreaks or school closures have been reported in Missouri, to date, this influenza season.
- Influenza activity was low in the U.S. during Week 42. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Sporadic is defined as: Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2e263nz. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 43**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 43**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 43 (October 23 – October 29, 2016)

Influenza Type	Week 41	Week 42	Week 43	2016-2017* Season-to-Date
Influenza A	29	22	14	84
Influenza B	20	16	16	69
Influenza Unknown Or Untyped	1	3	0	8
Total	50	41	30	161

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 43 (October 23 – October 29, 2016)

Age Group	Week 43 Cases	Week 43 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	3	1	21	6
05-14	3	0	27	3
15-64	17	0	93	2
65+	7	1	20	2
Total	30	0	161	3

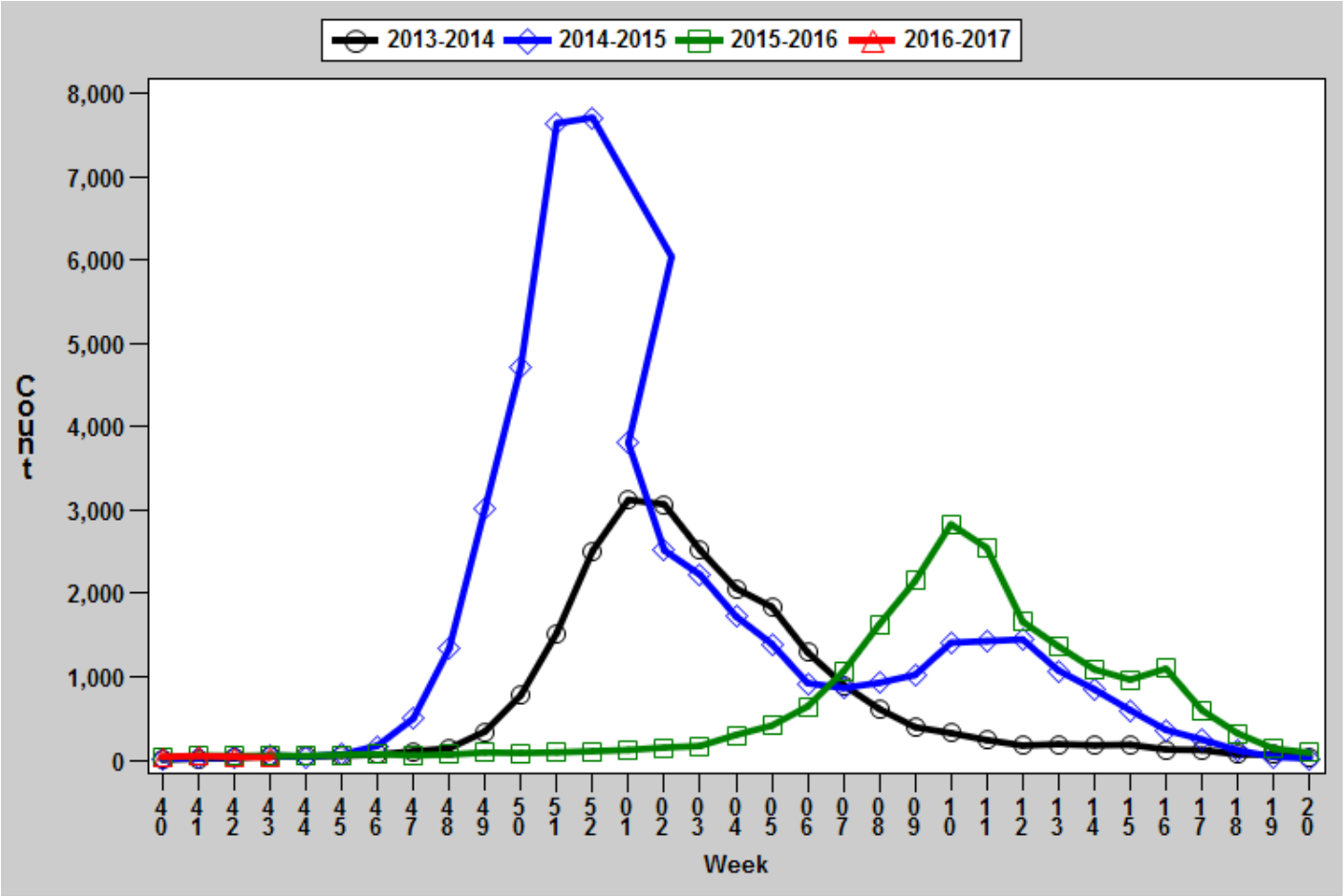
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 43 (October 23 – October 29, 2016)

District	Week 43 Cases	Week 43 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	3	0	16	2
EA	4	0	26	1
NW	5	0	47	3
SE	7	1	40	8
SW	11	1	32	3
Total	30	0	161	3

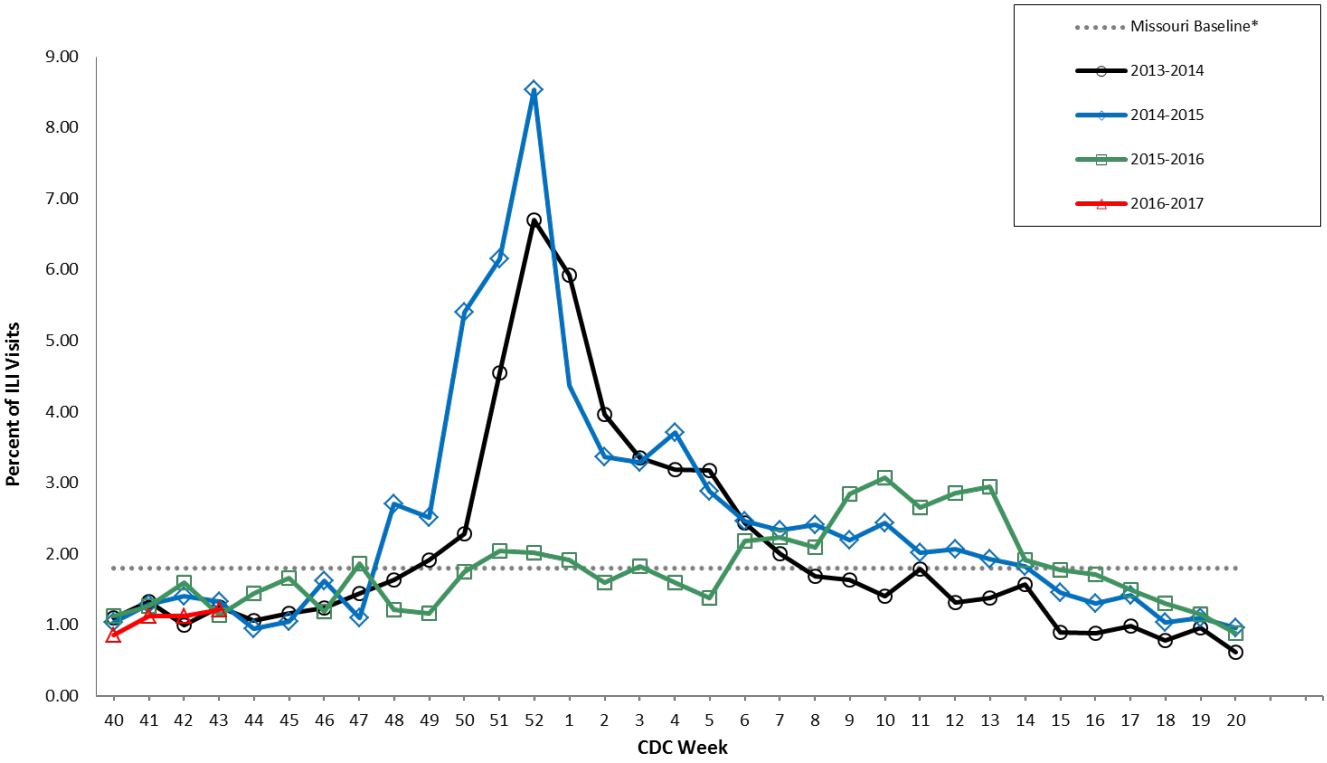
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*



†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

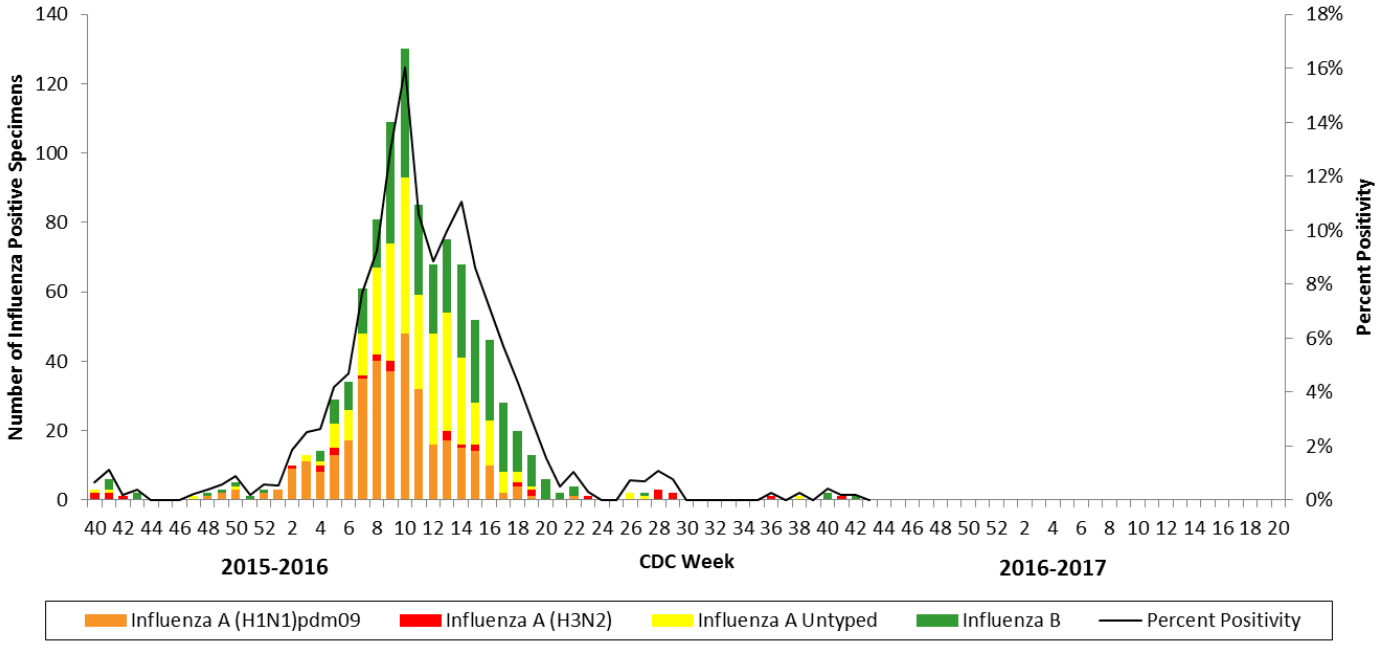
Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network, Centers for Disease Control and Prevention (CDC).

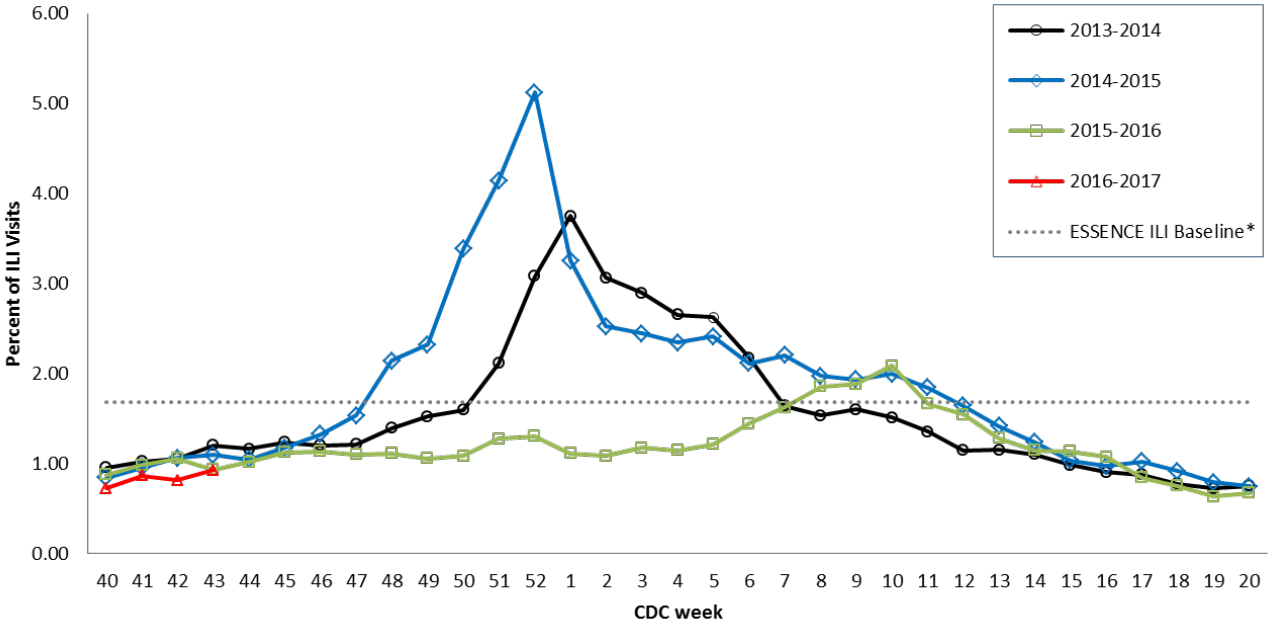
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



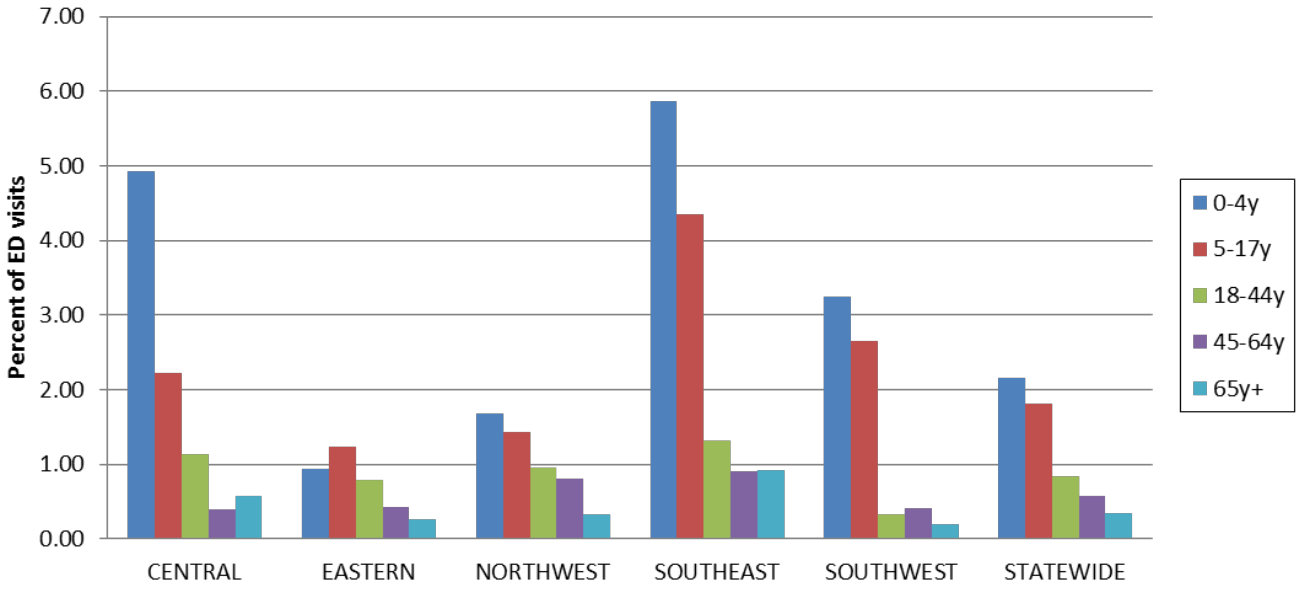
Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons



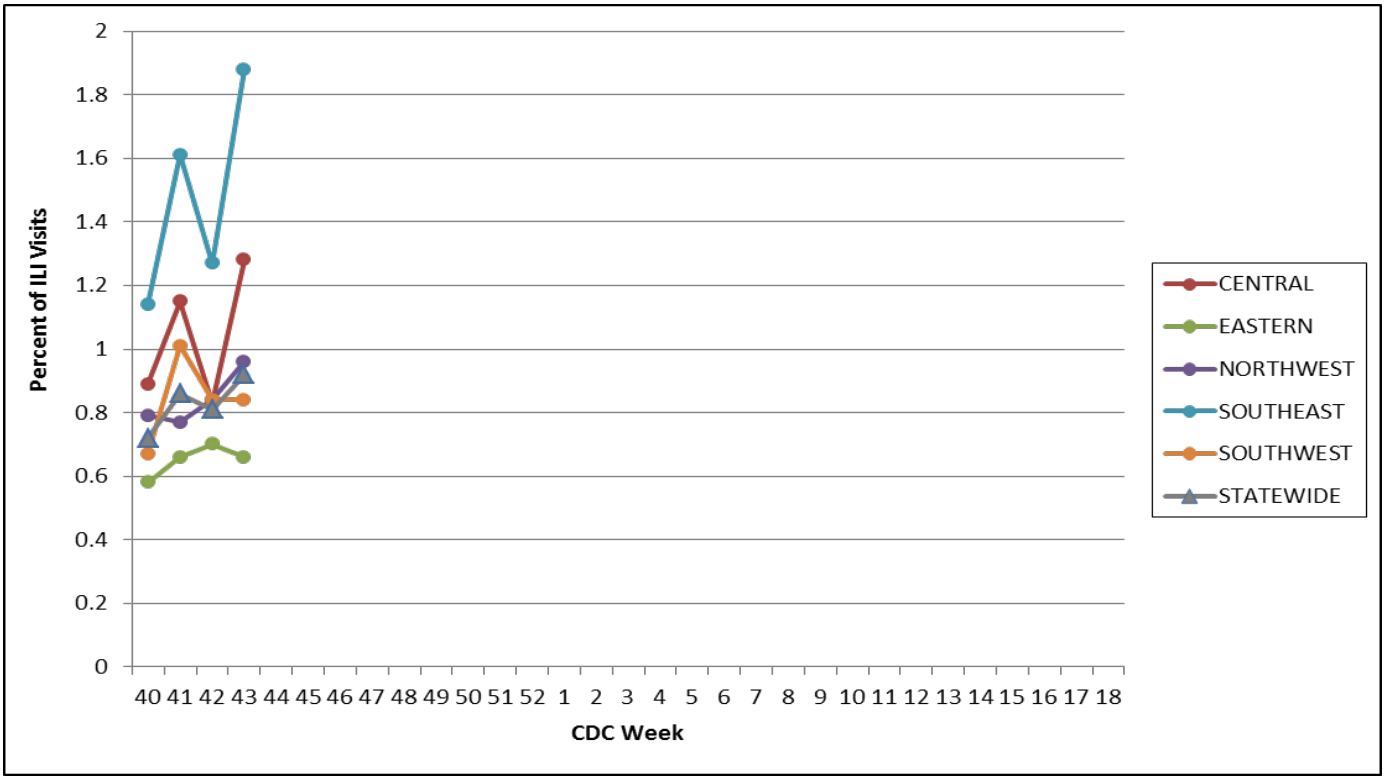
*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 43, 2016



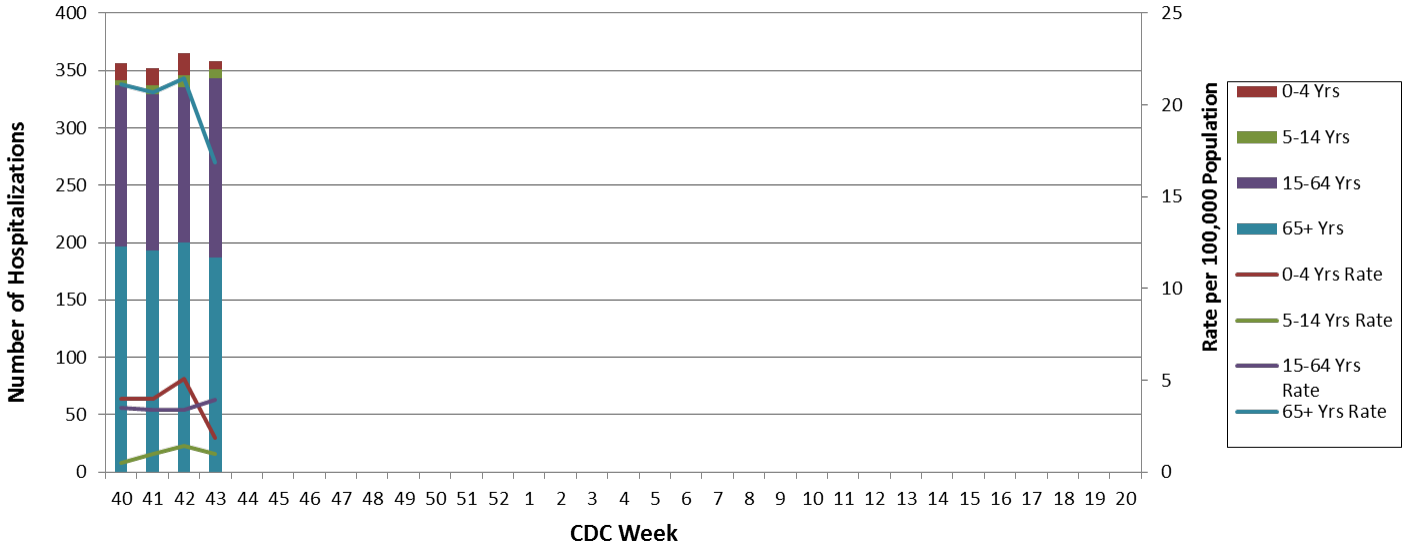
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 43, 2016



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 44: October 30 – November 5, 2016

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Sporadic[2].
- A season-to-date total of 196 laboratory-positive[3] influenza cases (103 influenza A, 84 influenza B, and nine untyped) have been reported in Missouri as of Week 44. The influenza type for reported cases season-to-date includes 52% influenza A, 43% influenza B, and 5% untyped. Twenty-five laboratory-positive[3] influenza cases (11 influenza A, 13 influenza B, and one untyped) were reported during Week 44. No laboratory-confirmed cases of influenza were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 44.
- Influenza-like illness (ILI) activity is above baseline for the Missouri Outpatient ILI Surveillance Network (ILINet) and below baseline for the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 1.84% and 0.96% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories was low.
- No influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 43, 38 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 238 P&I associated deaths in Missouri.[5]
- No influenza or ILI-associated outbreaks or school closures have been reported in Missouri, to date, this influenza season.
- Influenza activity was low in the U.S. during Week 43. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Sporadic is defined as: Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2eldMxr. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 44**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 44**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 44 (October 30 – November 5, 2016)

Influenza Type	Week 42	Week 43	Week 44	2016-2017* Season-to-Date
Influenza A	25	16	11	103
Influenza B	16	18	13	84
Influenza Unknown Or Untyped	3	0	1	9
Total	44	34	25	196

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 44 (October 30 – November 5, 2016)

Age Group	Week 44 Cases	Week 44 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	5	1	27	7
05-14	2	0	31	4
15-64	12	0	108	3
65+	6	1	30	3
Total	25	0	196	3

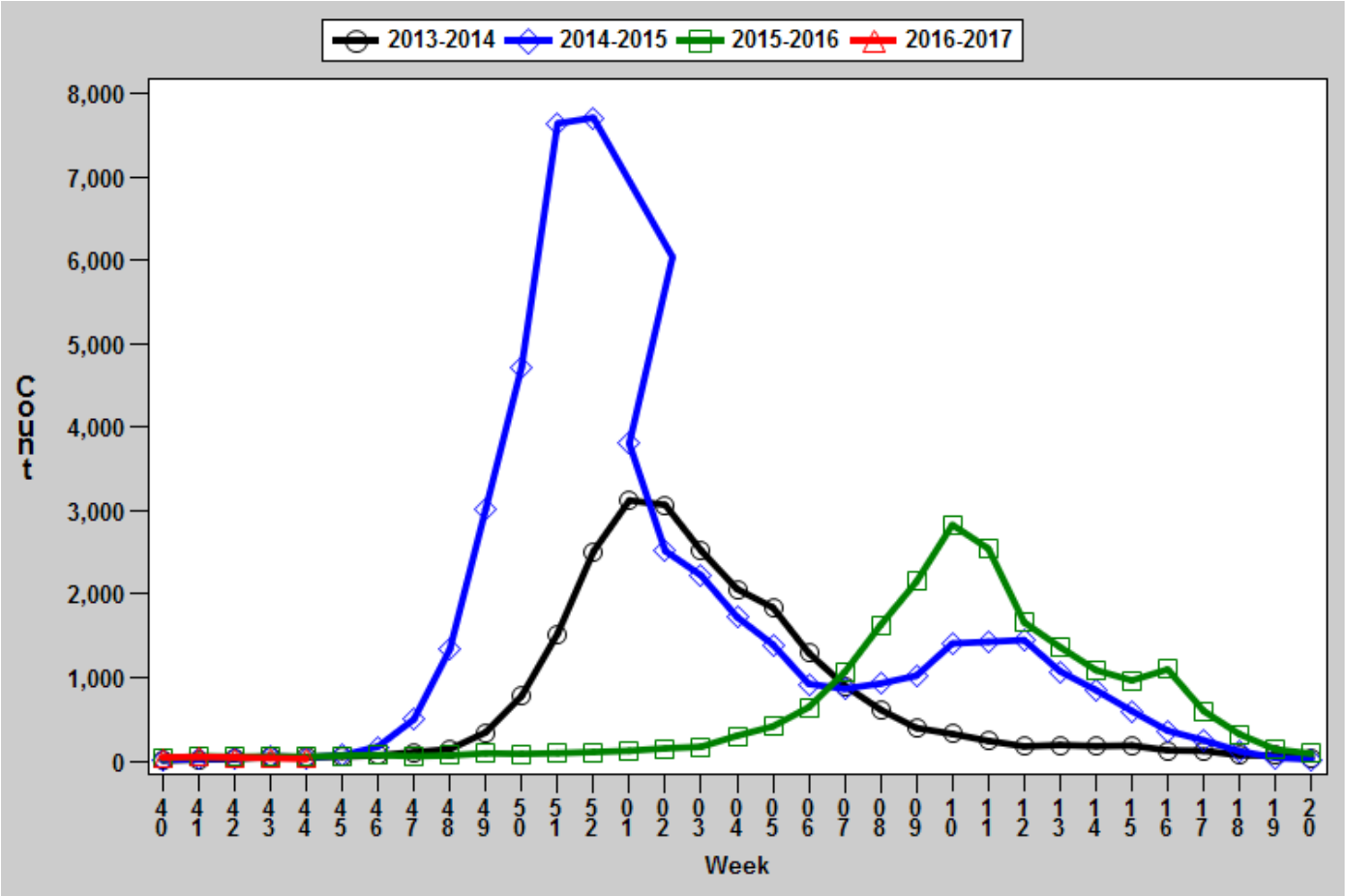
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 44 (October 30 – November 5, 2016)

District	Week 44 Cases	Week 44 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	1	0	21	3
EA	5	0	32	1
NW	13	1	61	4
SE	3	1	47	10
SW	3	0	35	3
Total	25	0	196	3

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*



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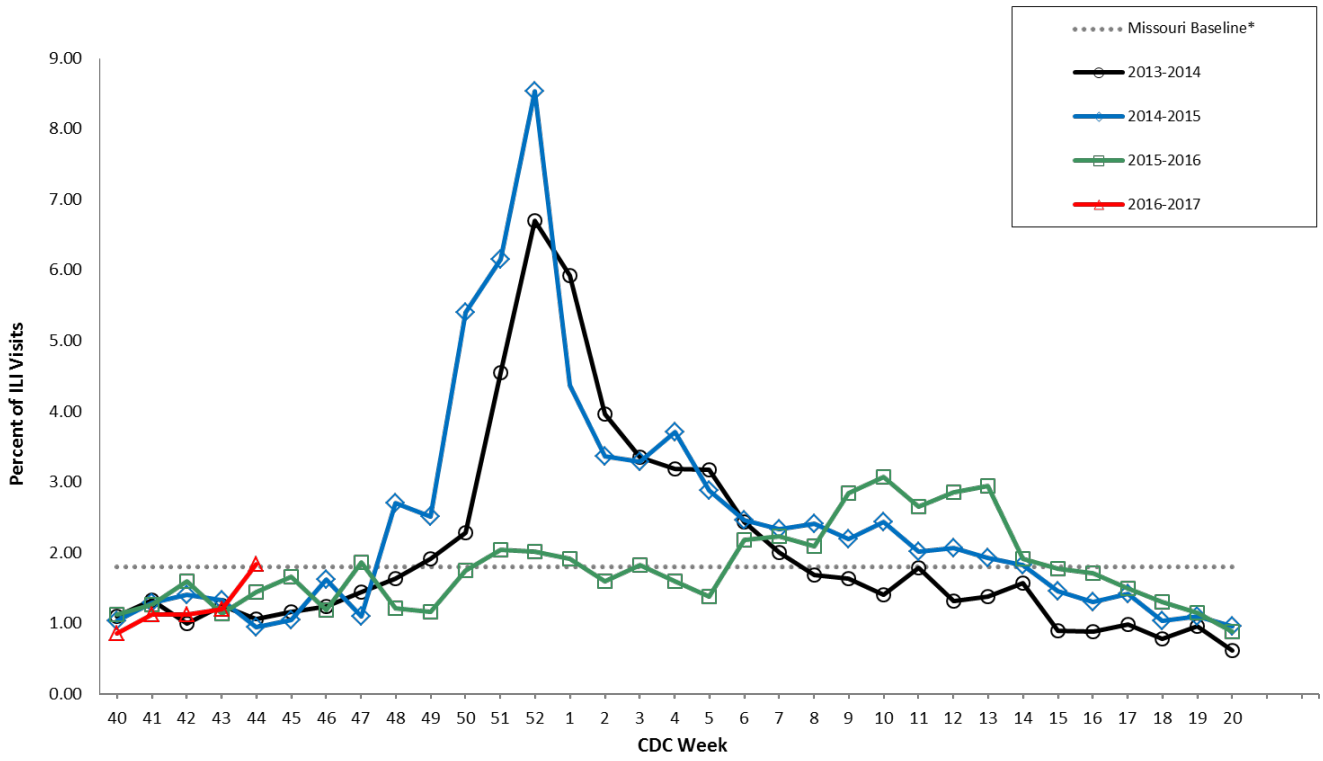
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

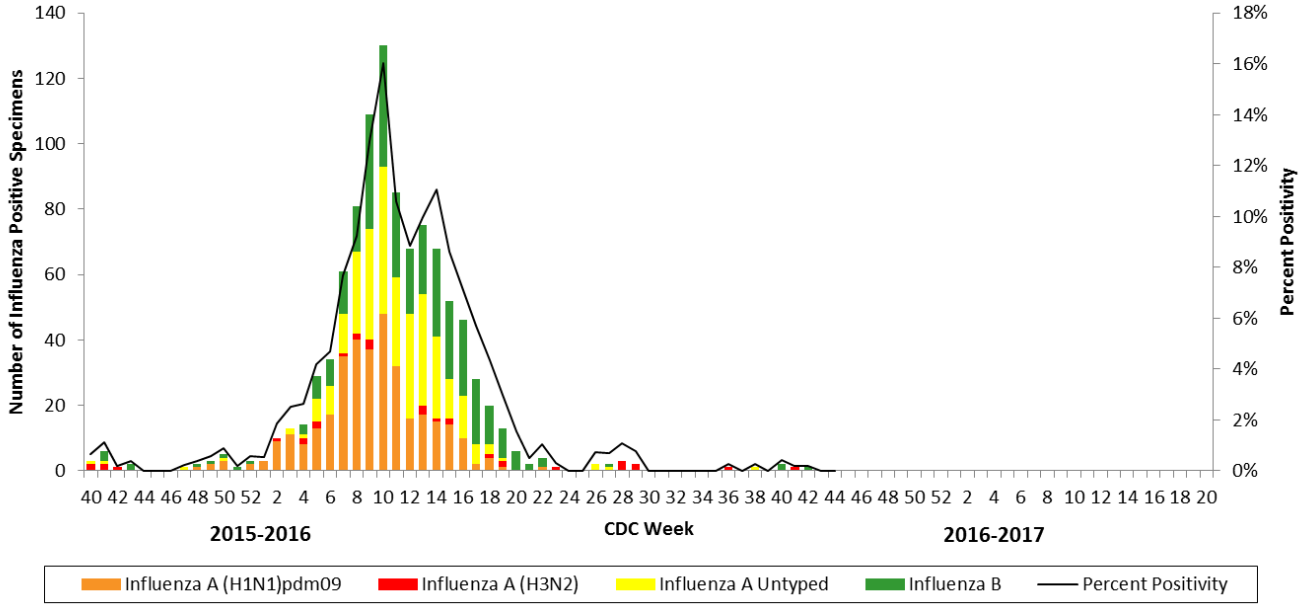
Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network, Centers for Disease Control and Prevention (CDC).

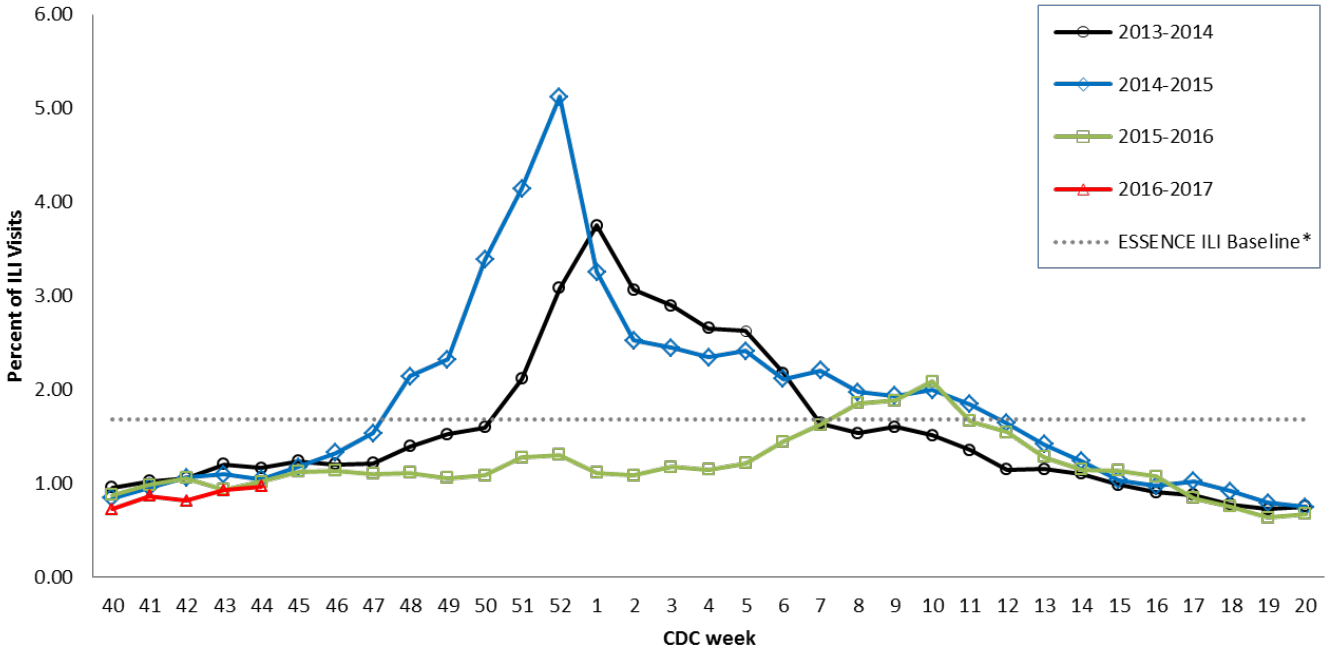
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

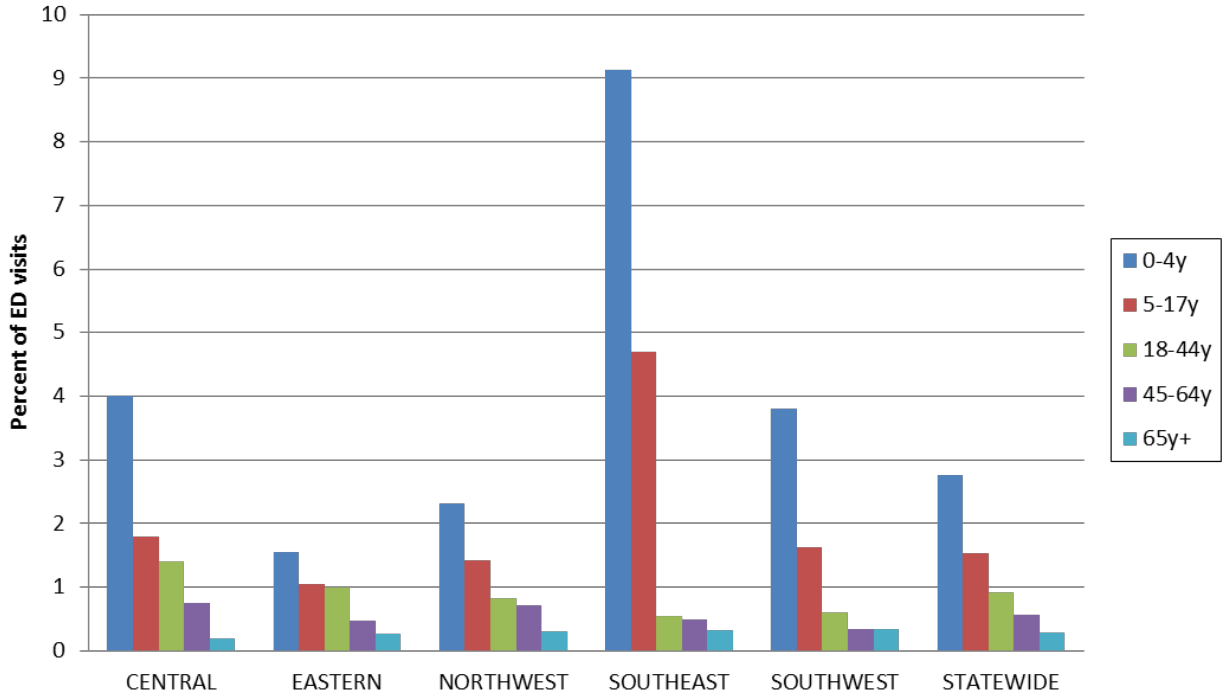
Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons



*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

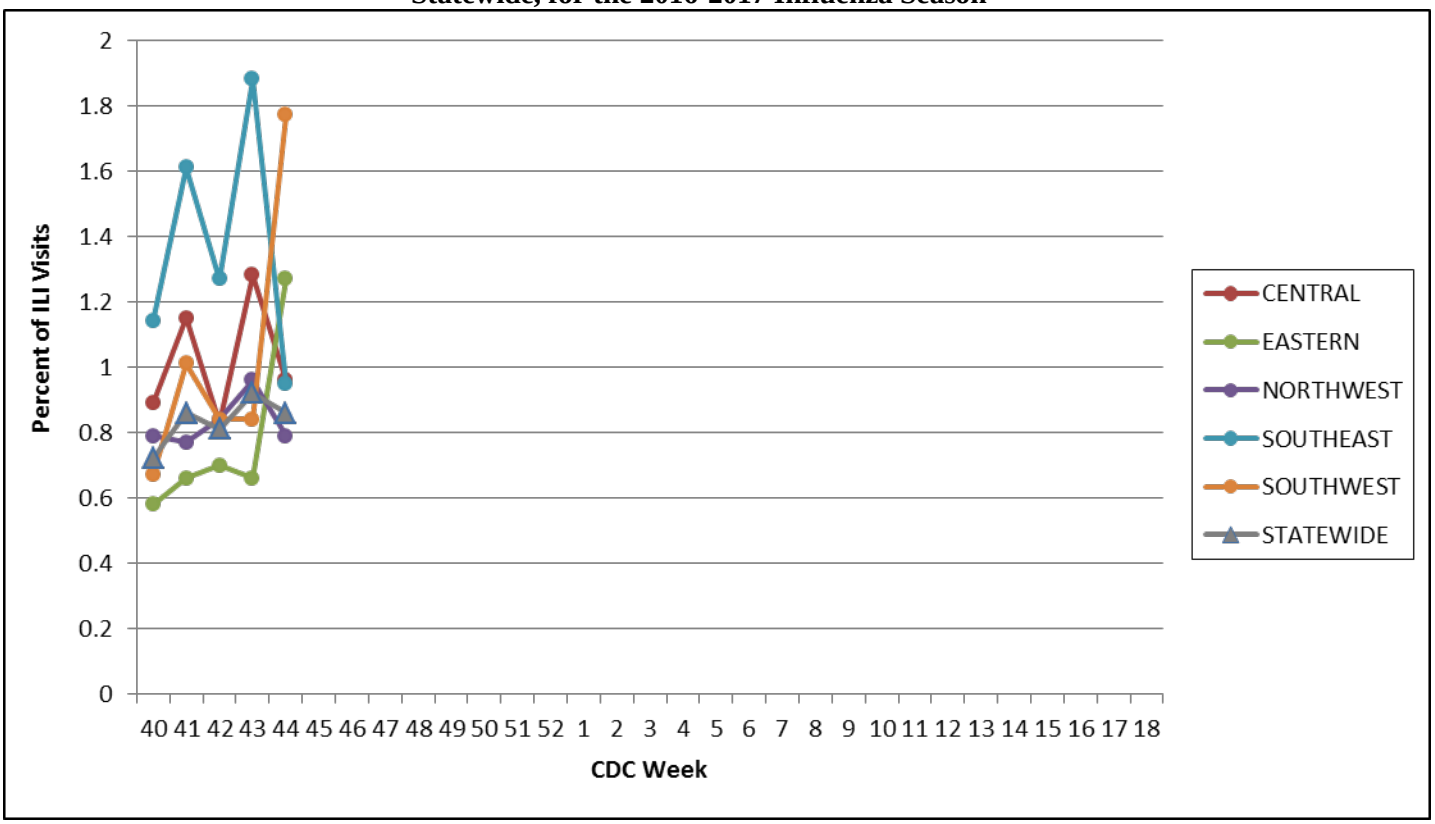
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 44, 2016



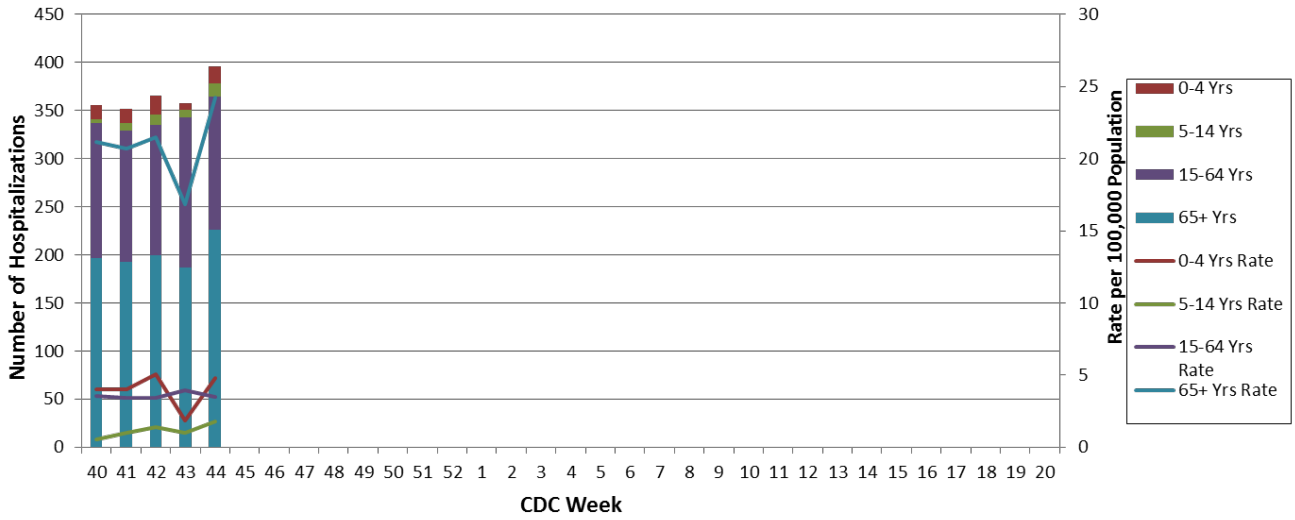
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 44, 2016



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 45: November 6 – November 12, 2016

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Sporadic[2].
- A season-to-date total of 260 laboratory-positive[3] influenza cases (132 influenza A, 116 influenza B, and 12 untyped) have been reported in Missouri as of Week 45. The influenza type for reported cases season-to-date includes 51% influenza A, 45% influenza B, and 4% untyped. Thirty-nine laboratory-positive[3] influenza cases (15 influenza A, 23 influenza B, and one untyped) were reported during Week 45. No laboratory-confirmed cases of influenza were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 45.
- Influenza-like illness (ILI) activity is below baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and for the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 1.69% and 0.99% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories was low.
- No influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 44, 48 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 286 P&I associated deaths in Missouri.[5]
- No influenza or ILI-associated outbreaks or school closures have been reported in Missouri, to date, this influenza season.
- Influenza activity was low in the U.S. during Week 44. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Sporadic is defined as: Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2eKGN5T. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 45**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 45**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 45 (November 6 – November 12, 2016)

Influenza Type	Week 43	Week 44	Week 45	2016-2017* Season-to-Date
Influenza A	18	20	15	132
Influenza B	18	19	23	116
Influenza Unknown Or Untyped	0	3	1	12
Total	36	42	39	260

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 45 (November 6 – November 12, 2016)

Age Group	Week 45 Cases	Week 45 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	4	1	35	9
05-14	7	1	42	5
15-64	15	0	139	3
65+	13	1	44	5
Total	39	1	260	4

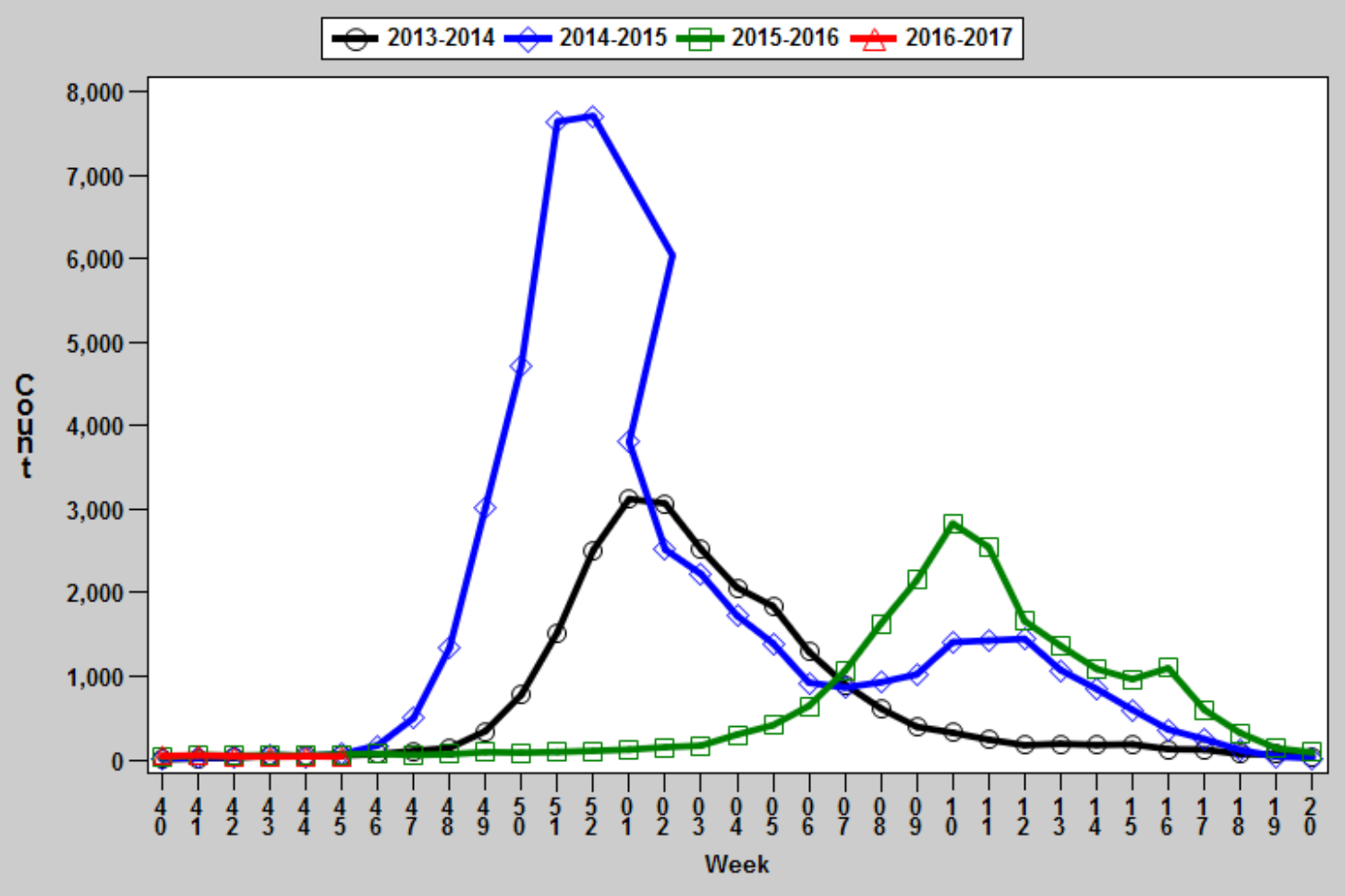
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 45 (November 6 – November 12, 2016)

District	Week 45 Cases	Week 45 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	9	1	36	5
EA	9	0	41	2
NW	14	1	82	5
SE	2	0	52	11
SW	5	0	49	5
Total	39	1	260	4

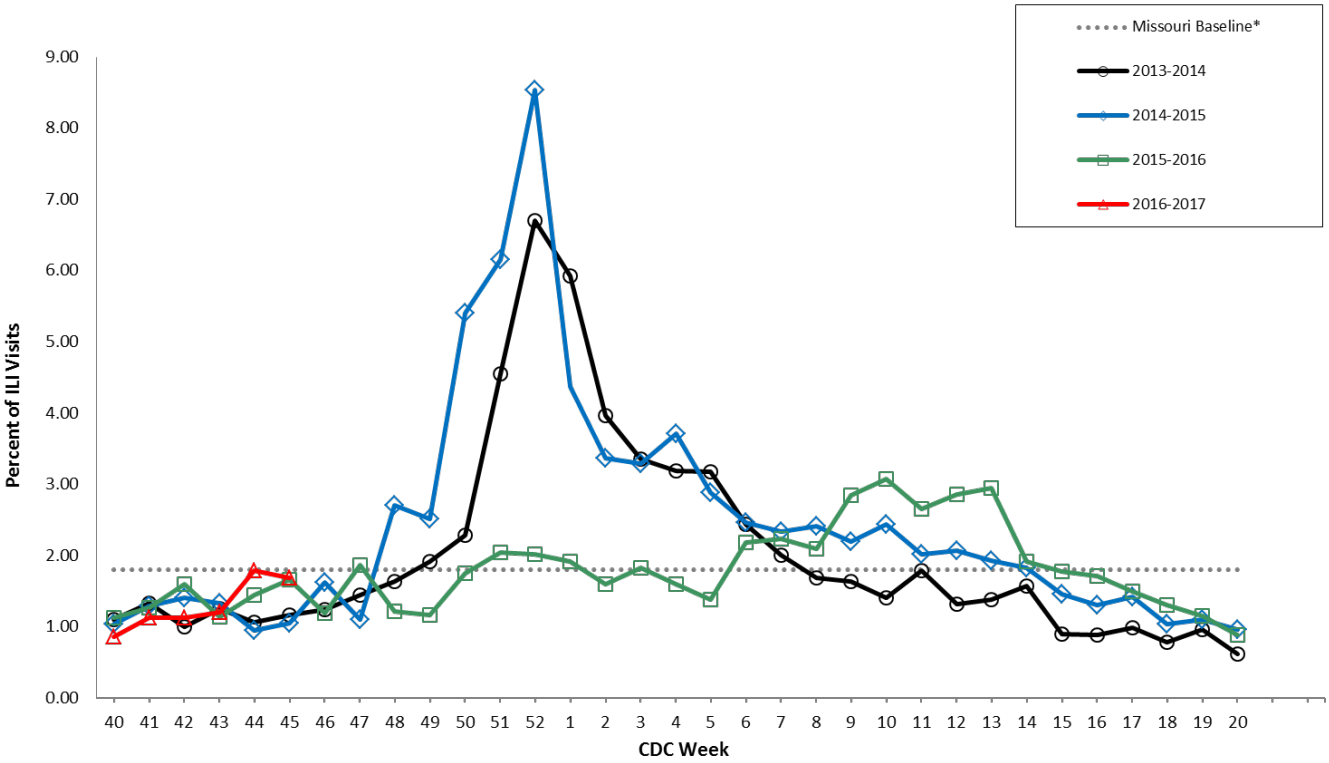
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*



†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

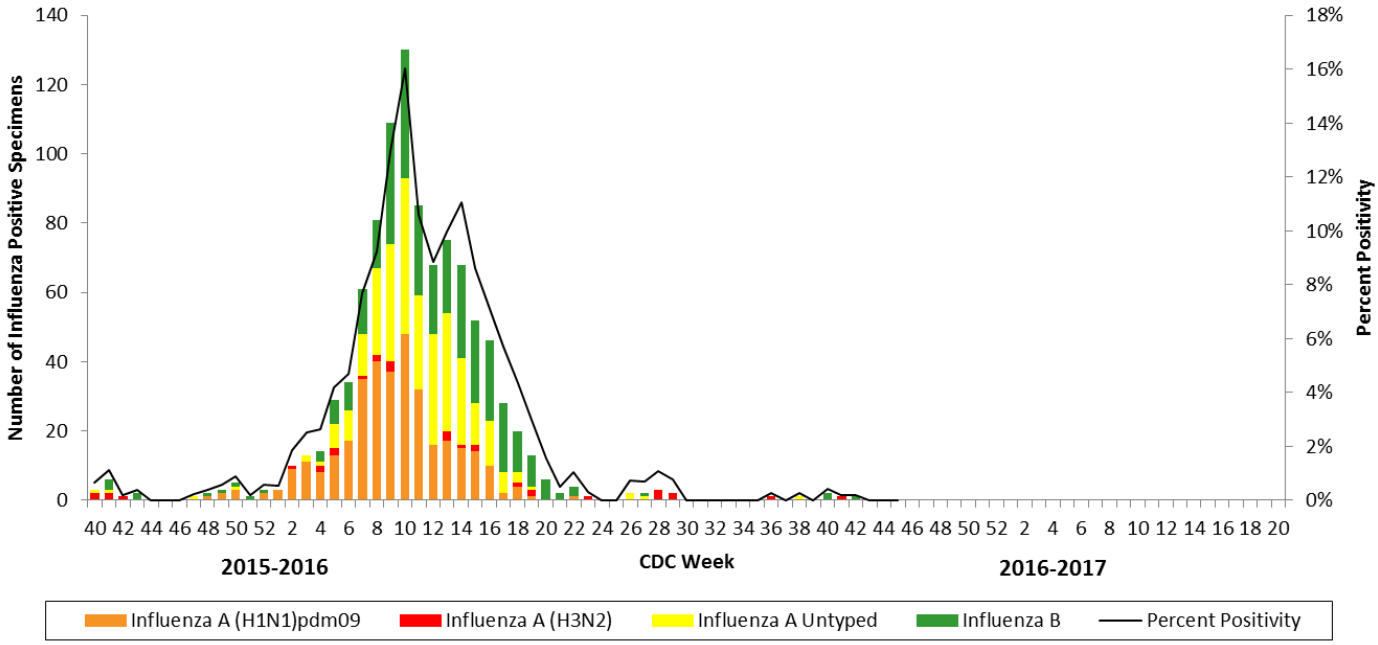
Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network, Centers for Disease Control and Prevention (CDC).

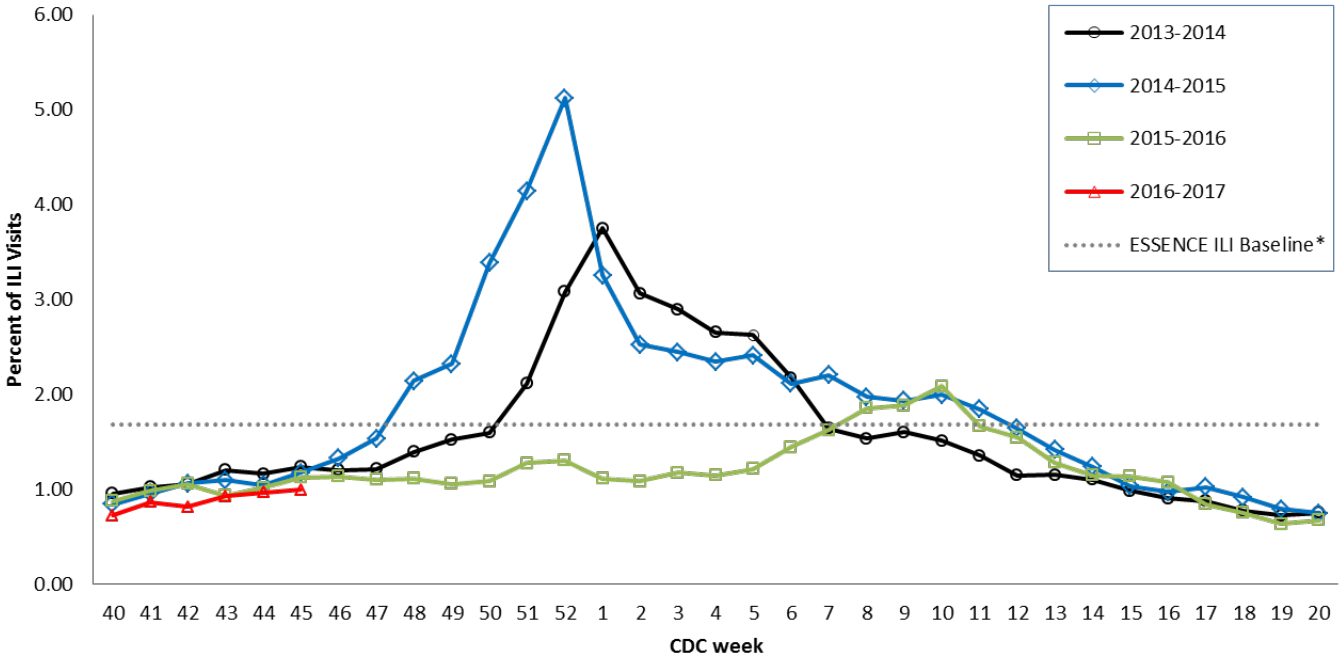
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons

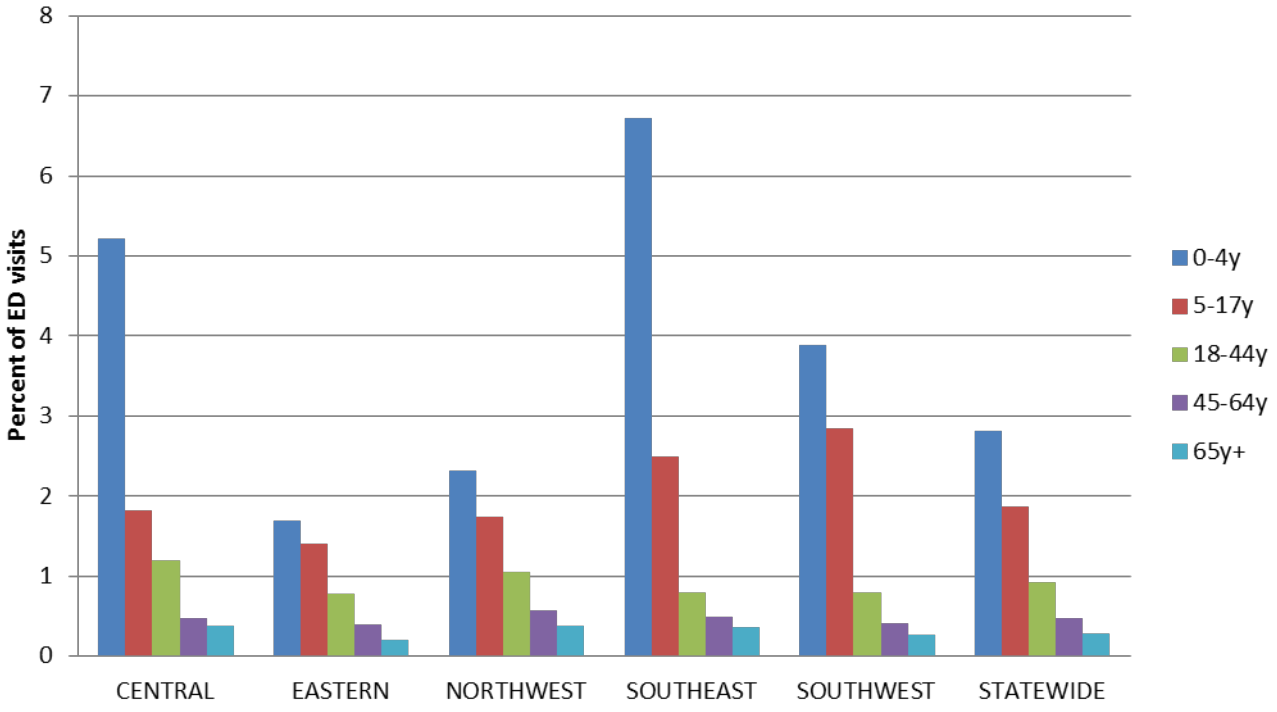


*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.

Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

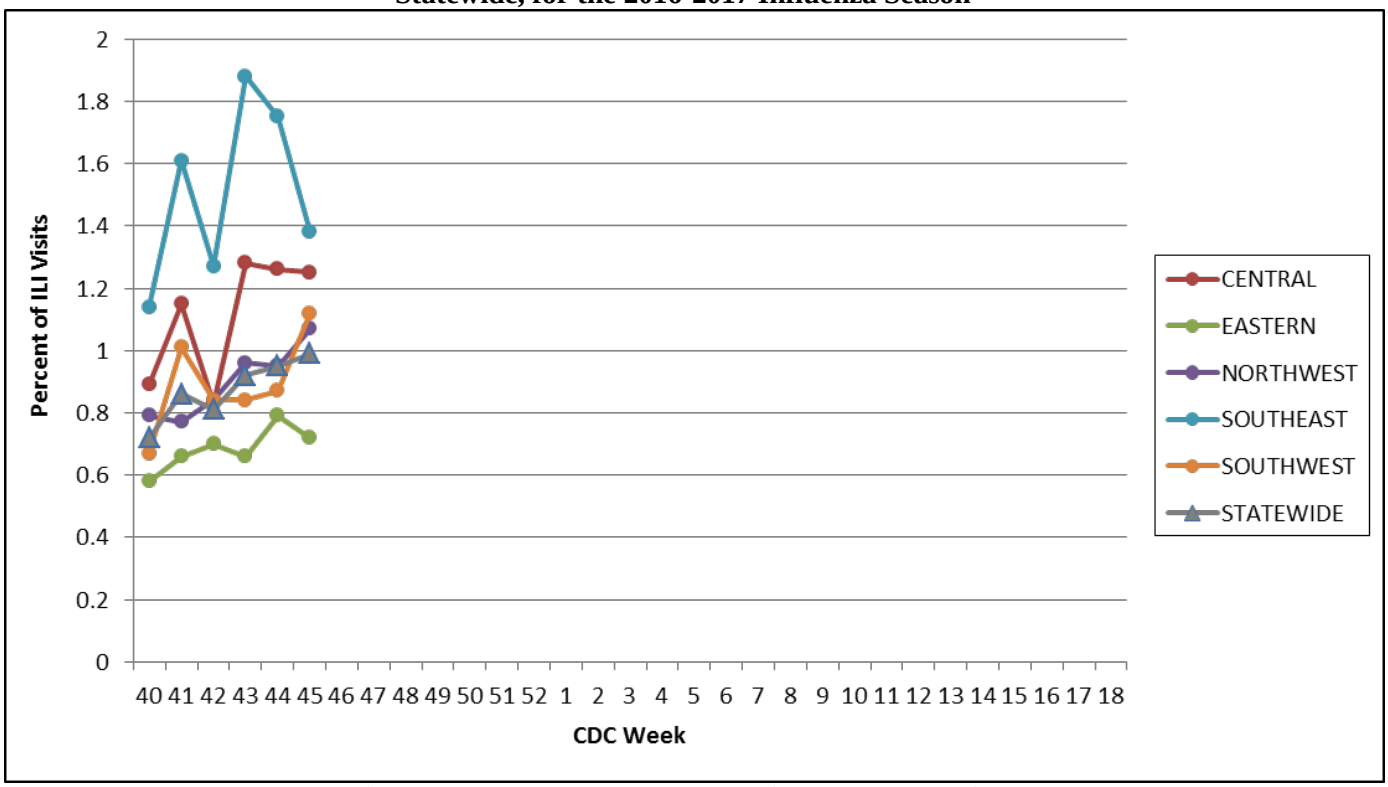
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 45, 2016



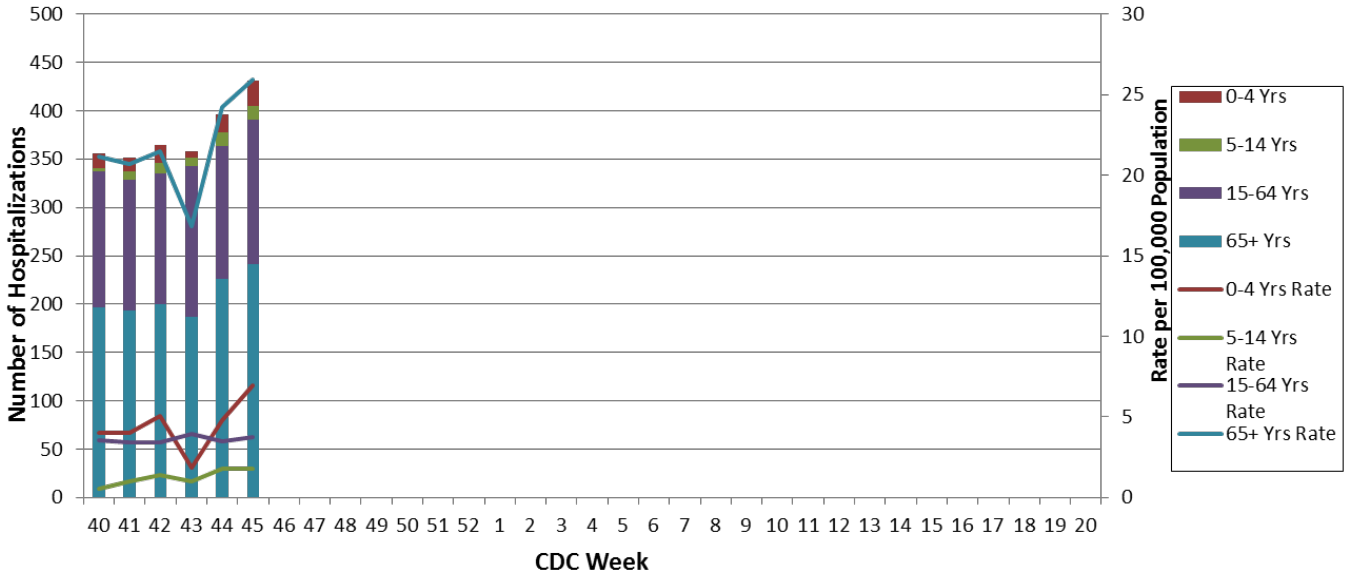
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 45, 2016



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 46: November 13 – November 19, 2016

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Sporadic[2].
- A season-to-date total of 305 laboratory-positive[3] influenza cases (154 influenza A, 136 influenza B, and 15 untyped) have been reported in Missouri as of Week 46. The influenza type for reported cases season-to-date includes 50% influenza A, 45% influenza B, and 5% untyped. Thirty-two laboratory-positive[3] influenza cases (15 influenza A and 17 influenza B) were reported during Week 46. No laboratory-confirmed cases of influenza were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 46.
- Influenza-like illness (ILI) activity is below baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and for the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 0.95% and 0.95% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories was low.
- No influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 45, 25 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 311 P&I associated deaths in Missouri.[5]
- No influenza or ILI-associated outbreaks or school closures have been reported in Missouri, to date, this influenza season.
- Influenza activity was low in the U.S. during Week 45. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Sporadic is defined as: Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2glQsgK. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 46**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 46**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 46 (November 13 – November 19, 2016)

Influenza Type	Week 44	Week 45	Week 46	2016-2017* Season-to-Date
Influenza A	22	18	15	154
Influenza B	19	26	17	136
Influenza Unknown Or Untyped	3	4	0	15
Total	44	48	32	305

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 46 (November 13 – November 19, 2016)

Age Group	Week 46 Cases	Week 46 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	4	1	41	11
05-14	4	1	47	6
15-64	22	1	169	4
65+	2	0	48	5
Total	32	1	305	5

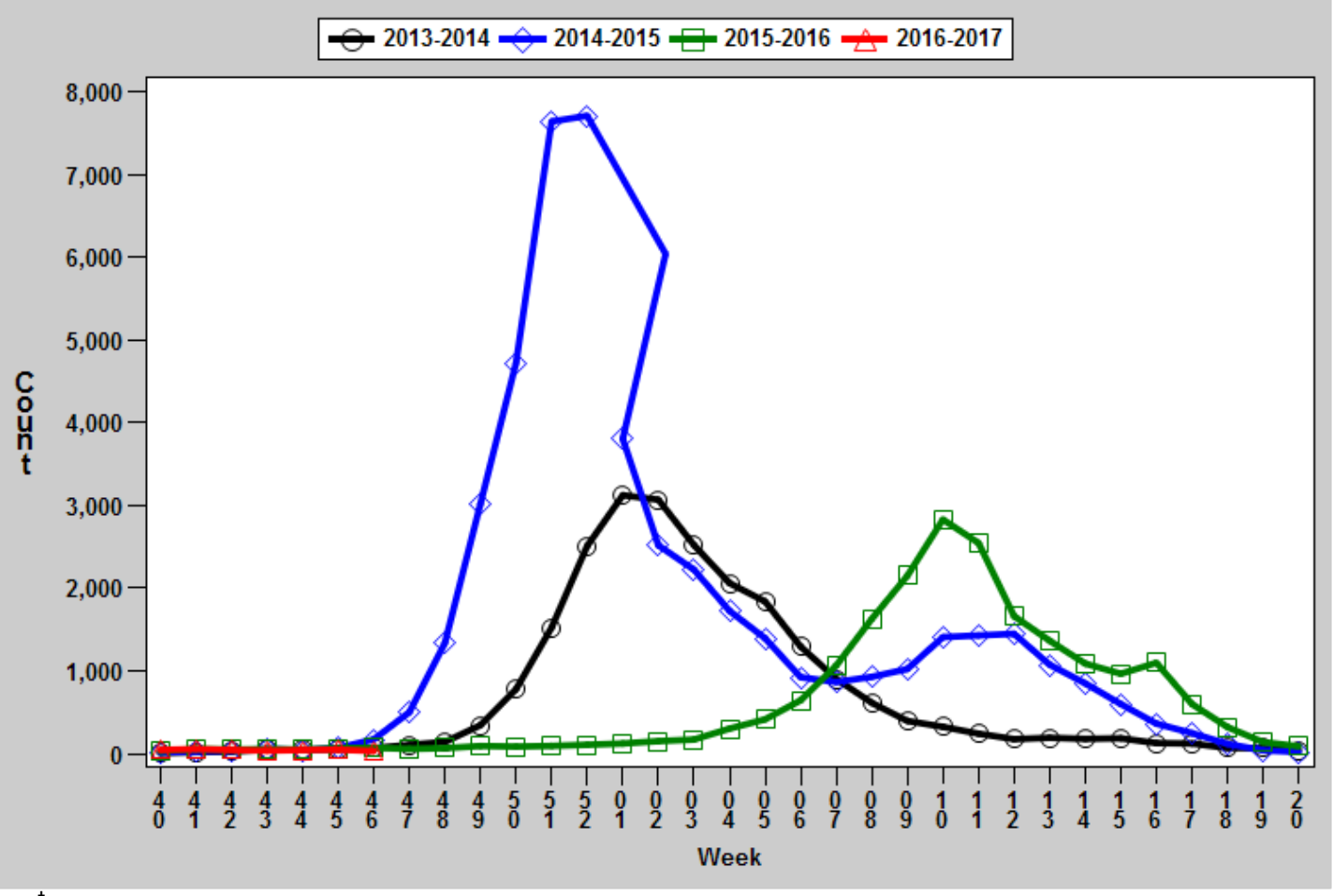
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 46 (November 13 – November 19, 2016)

District	Week 46 Cases	Week 46 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	0	0	39	6
EA	5	0	46	2
NW	13	1	103	6
SE	5	1	57	12
SW	9	1	60	6
Total	32	1	305	5

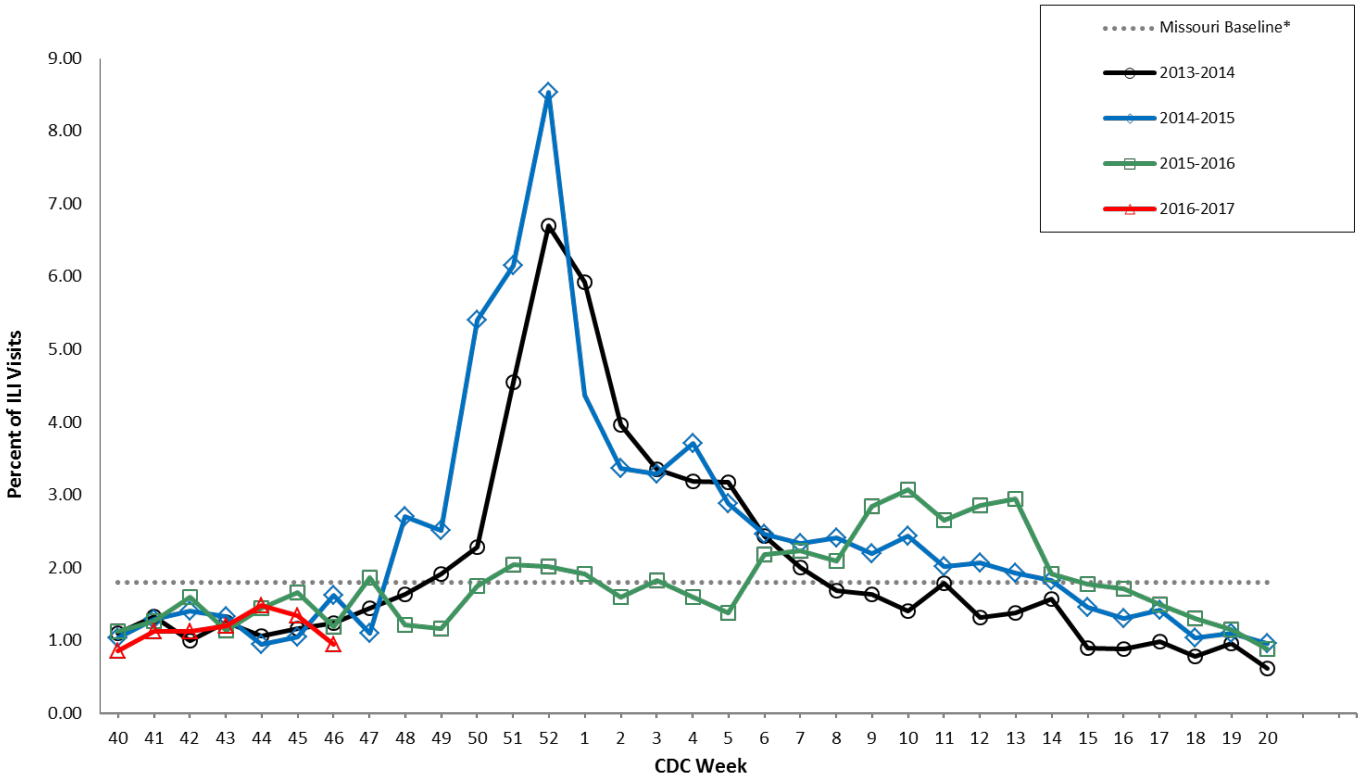
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017*



[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

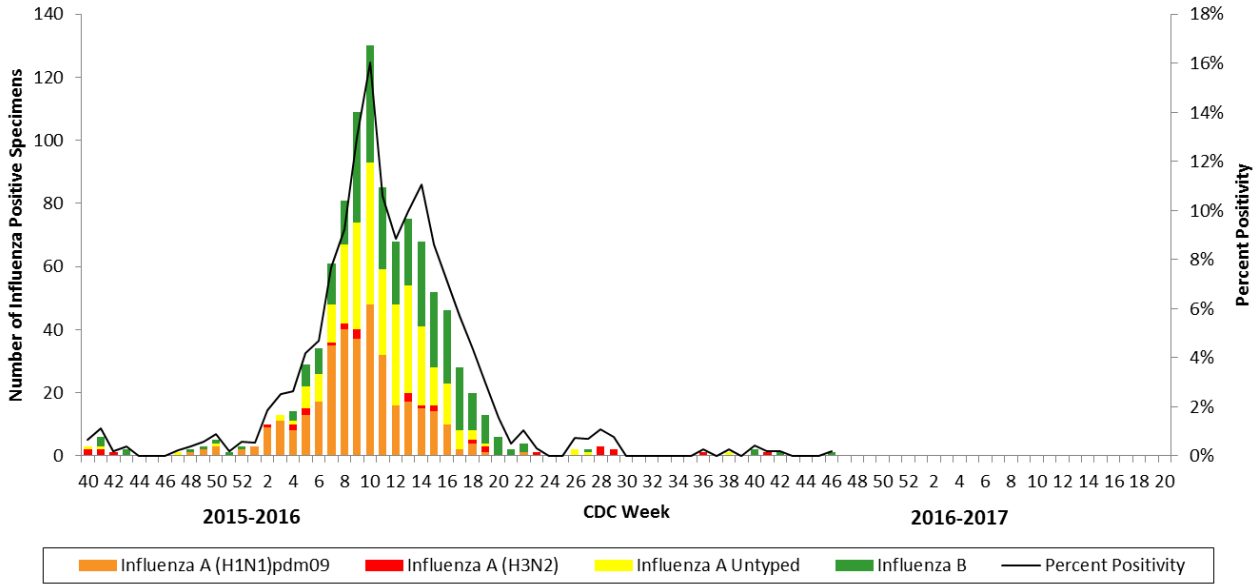
Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network, Centers for Disease Control and Prevention (CDC).

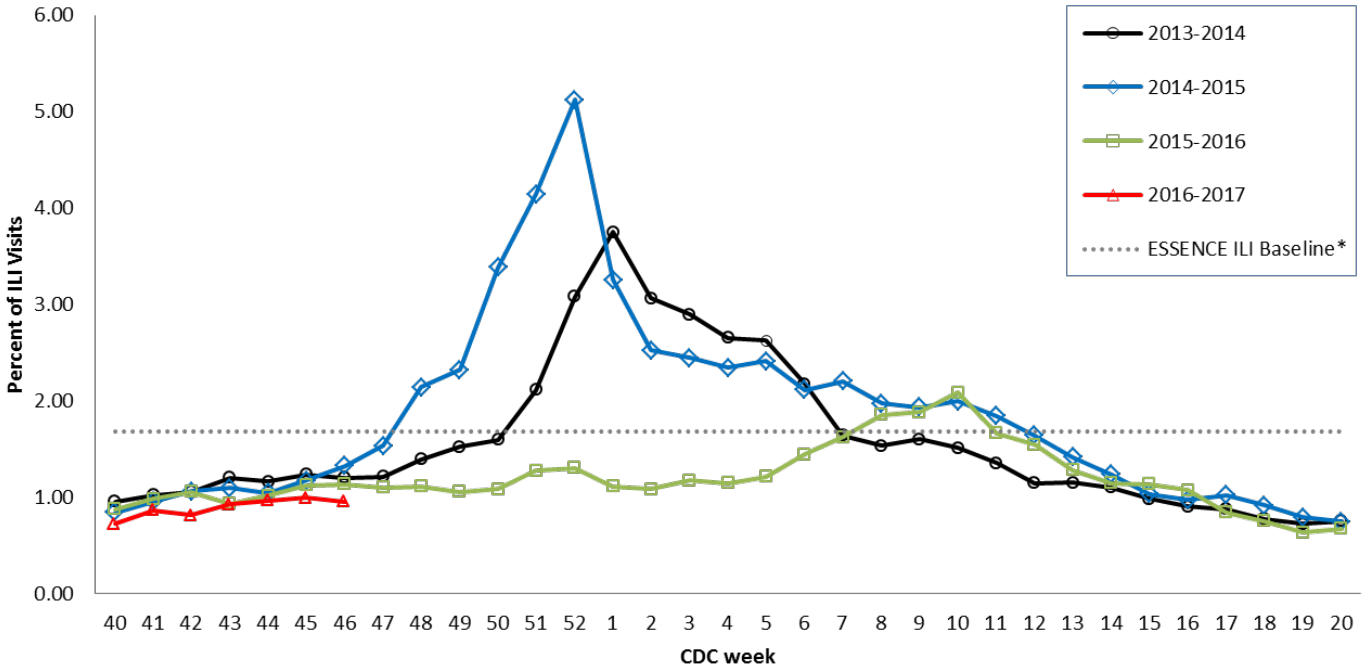
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons

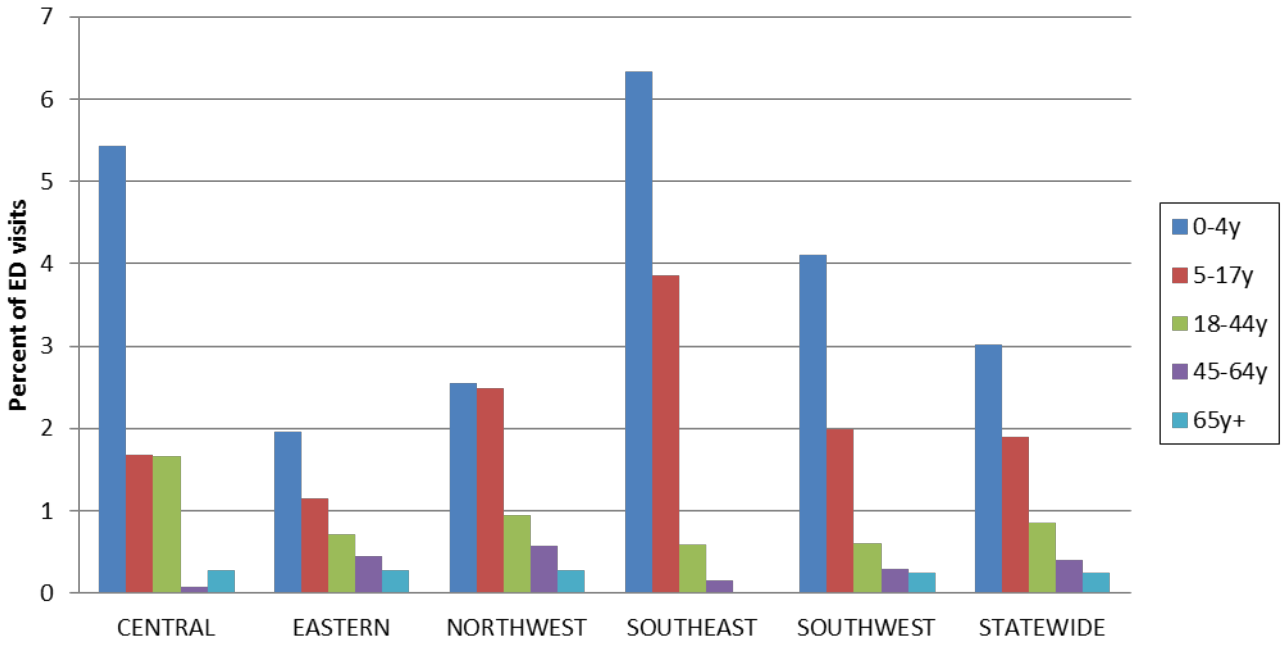


*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.

Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

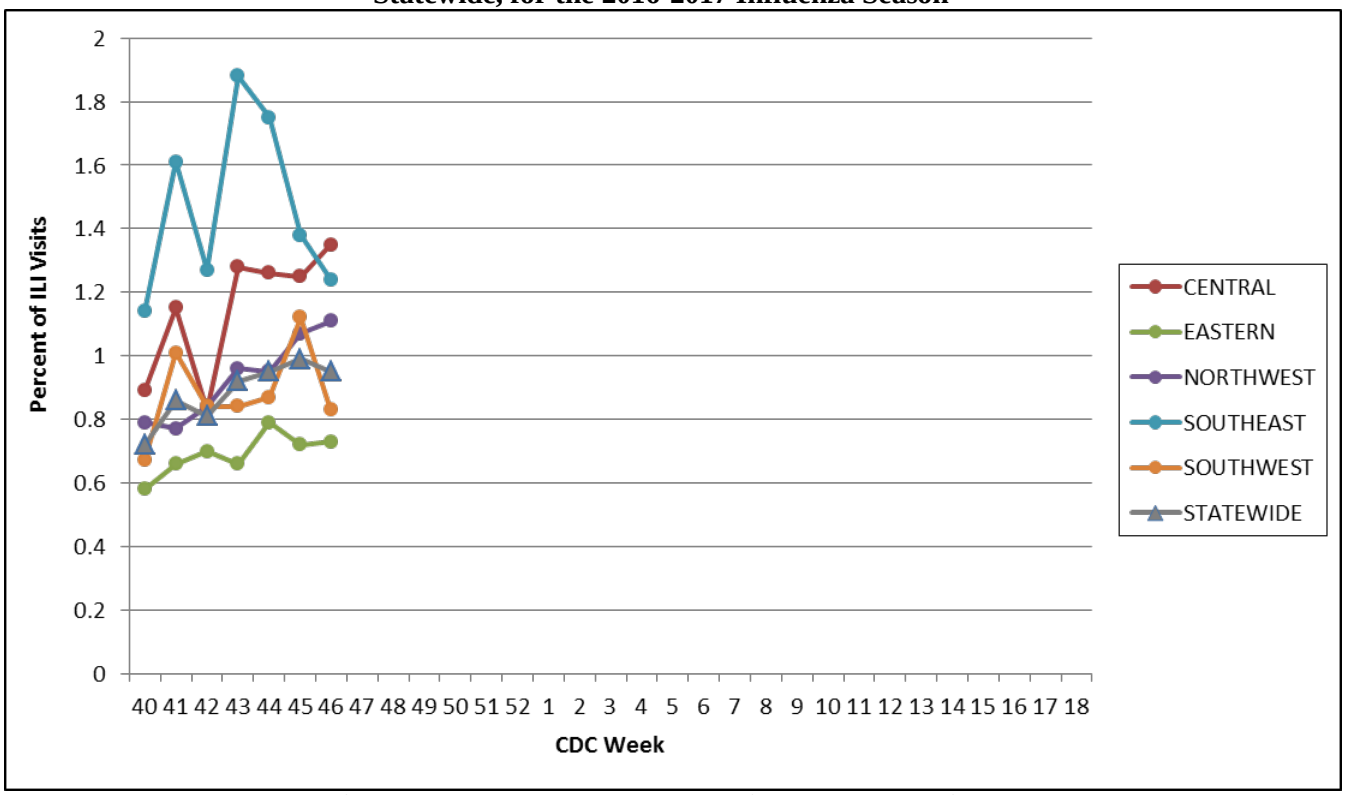
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 46, 2016



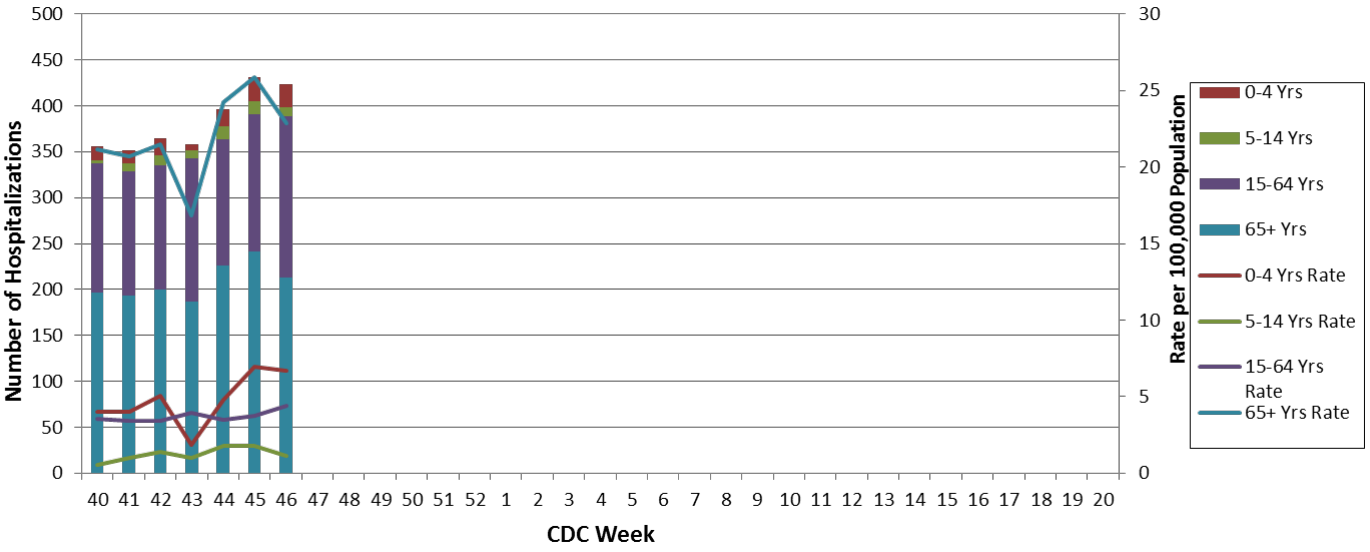
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 46, 2016



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 47: November 20 – November 26, 2016

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Sporadic[2].
- A season-to-date total of 379 laboratory-positive[3] influenza cases (193 influenza A, 169 influenza B, and 17 untyped) have been reported in Missouri as of Week 47. The influenza type for reported cases season-to-date includes 51% influenza A, 45% influenza B, and 4% untyped. Forty-seven laboratory-positive[3] influenza cases (23 influenza A, 23 influenza B, and one untyped) were reported during Week 47. One laboratory-confirmed case of influenza A (H3) was reported by the Missouri State Public Health Laboratory (MSPHL) during Week 47.
- Influenza-like illness (ILI) activity is above baseline for the Missouri Outpatient ILI Surveillance Network (ILINet) and below baseline for the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 1.98% and 1.05% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories was low.
- No influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 46, 80 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 391 P&I associated deaths in Missouri.[5]
- No influenza or ILI-associated outbreaks or school closures have been reported in Missouri, to date, this influenza season.
- Influenza activity increased slightly, but remained low in the U.S. during Week 46. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Sporadic is defined as: Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2fLNL6h. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 47**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 47**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 47 (November 20 – November 26, 2016)

Influenza Type	Week 45	Week 46	Week 47	2016-2017* Season-to-Date
Influenza A	19	23	23	193
Influenza B	27	21	23	169
Influenza Unknown Or Untyped	4	1	1	17
Total	50	45	47	379

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 47 (November 20 – November 26, 2016)

Age Group	Week 47 Cases	Week 47 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	12	3	59	16
05-14	7	1	57	7
15-64	22	1	204	5
65+	6	1	59	6
Total	47	1	379	6

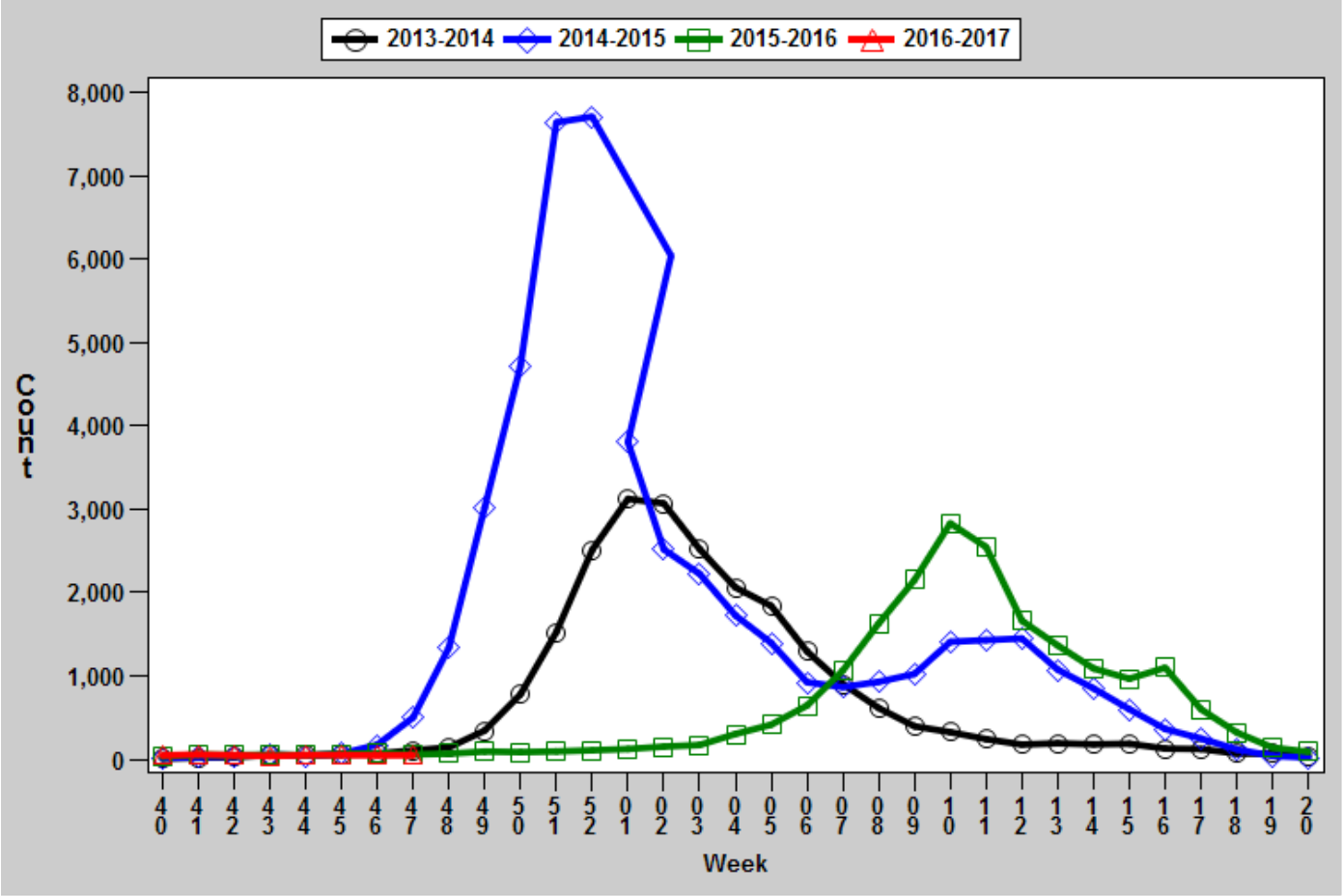
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 47 (November 20 – November 26, 2016)

District	Week 47 Cases	Week 47 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	9	1	53	8
EA	14	1	66	3
NW	12	1	130	8
SE	5	1	62	13
SW	7	1	68	6
Total	47	1	379	6

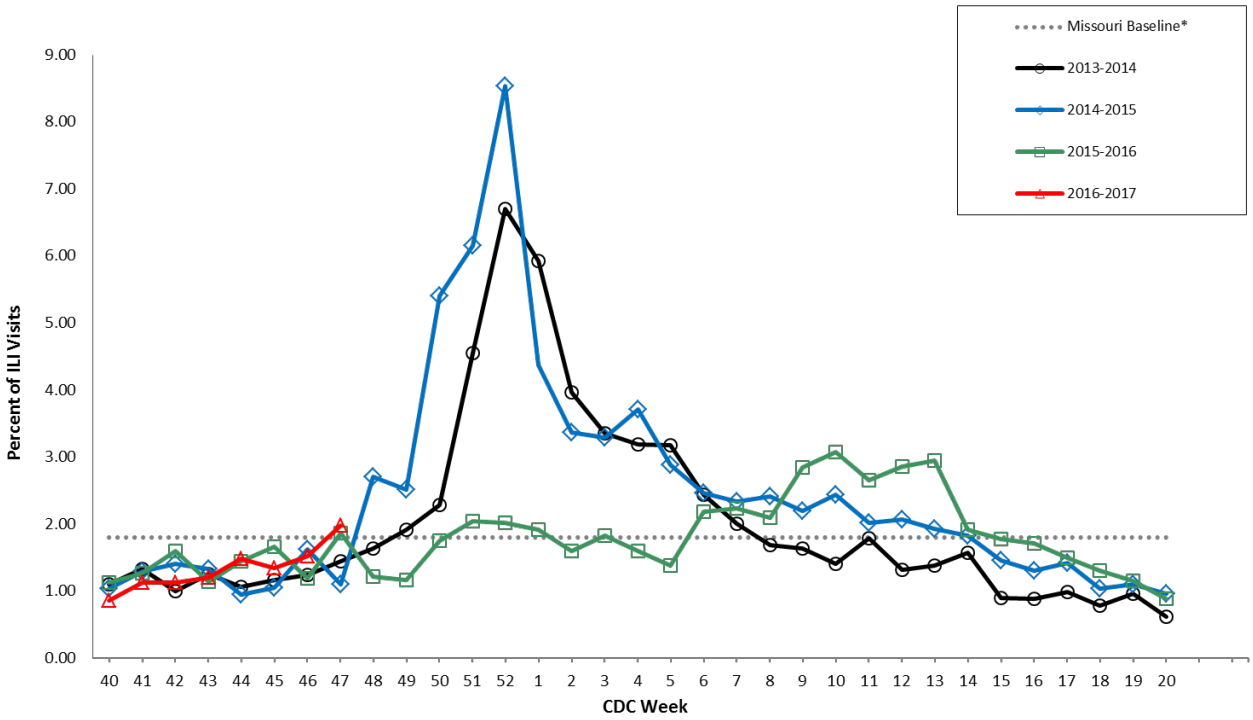
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*



†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

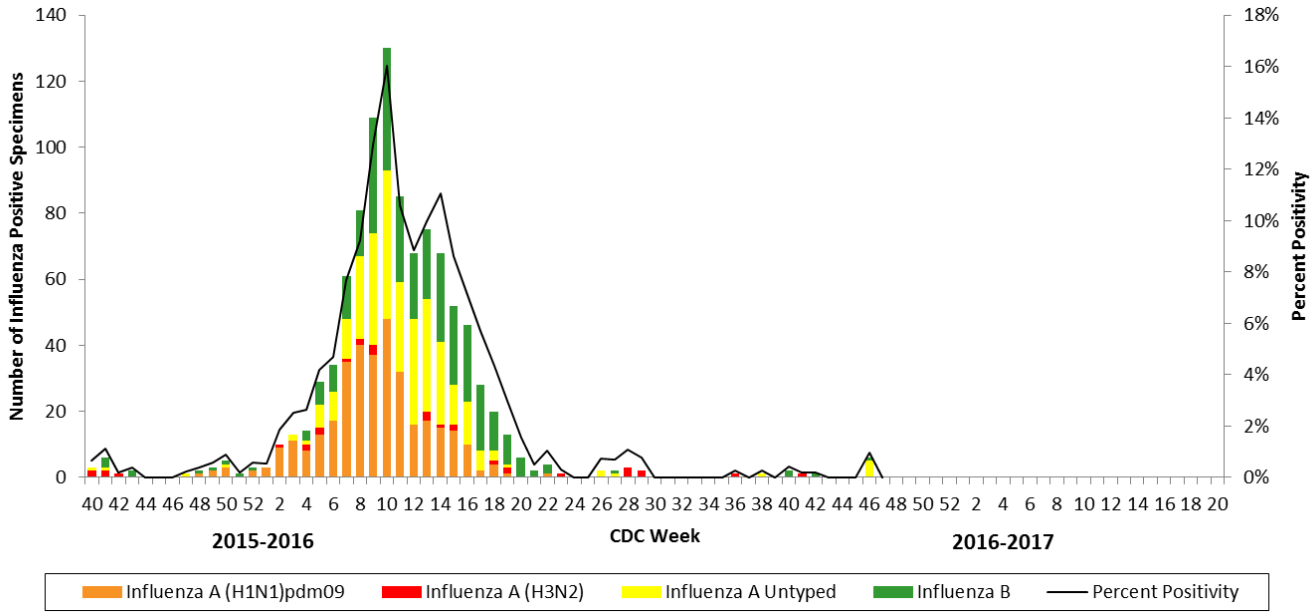
Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).

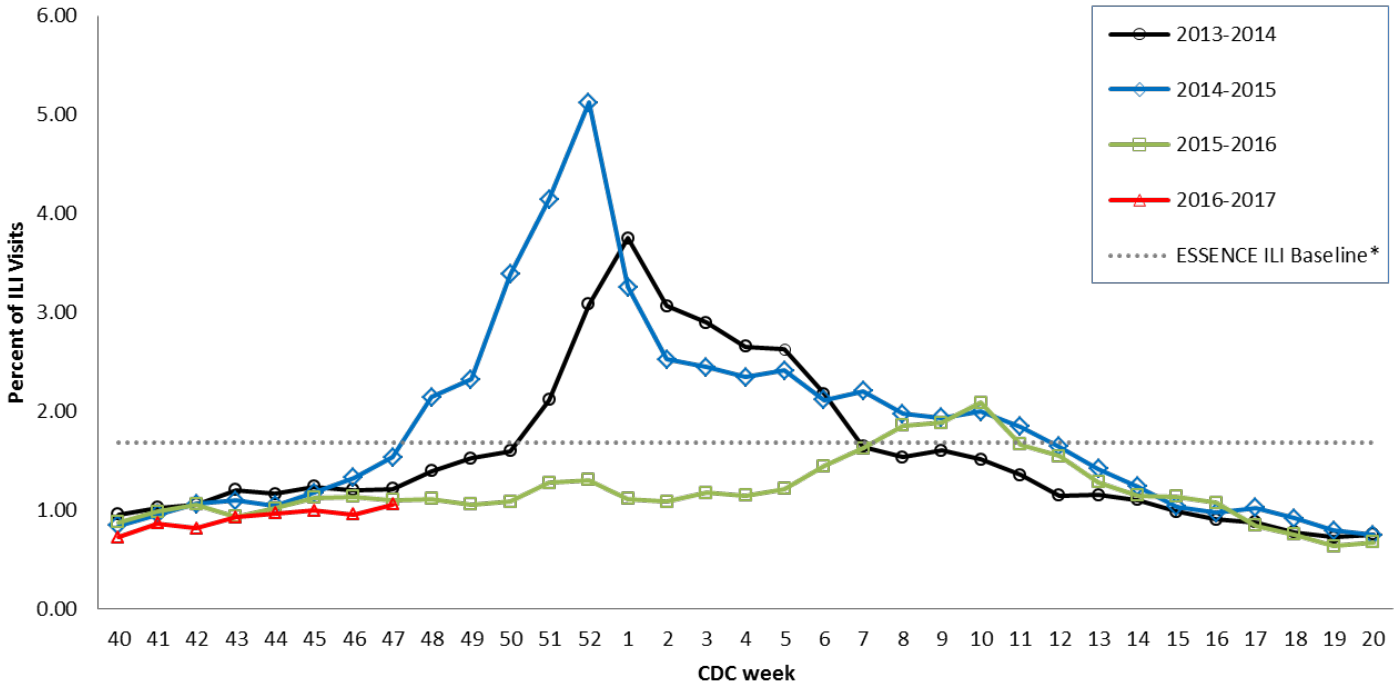
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



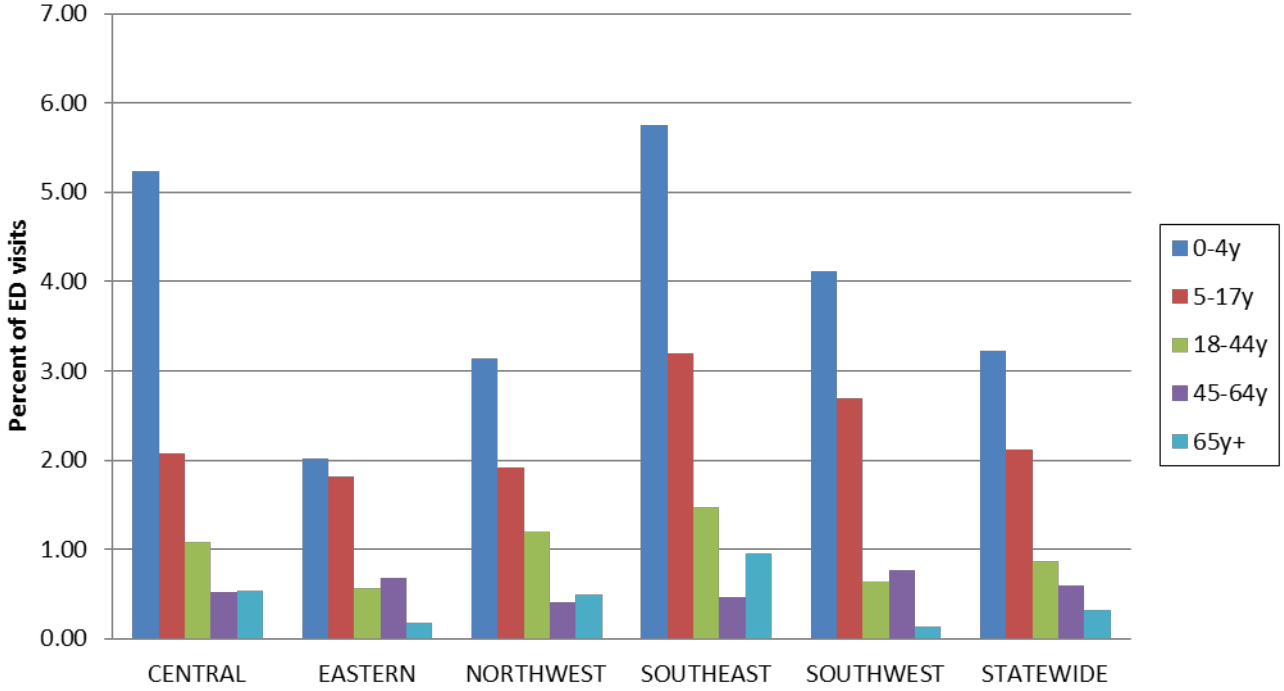
Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons



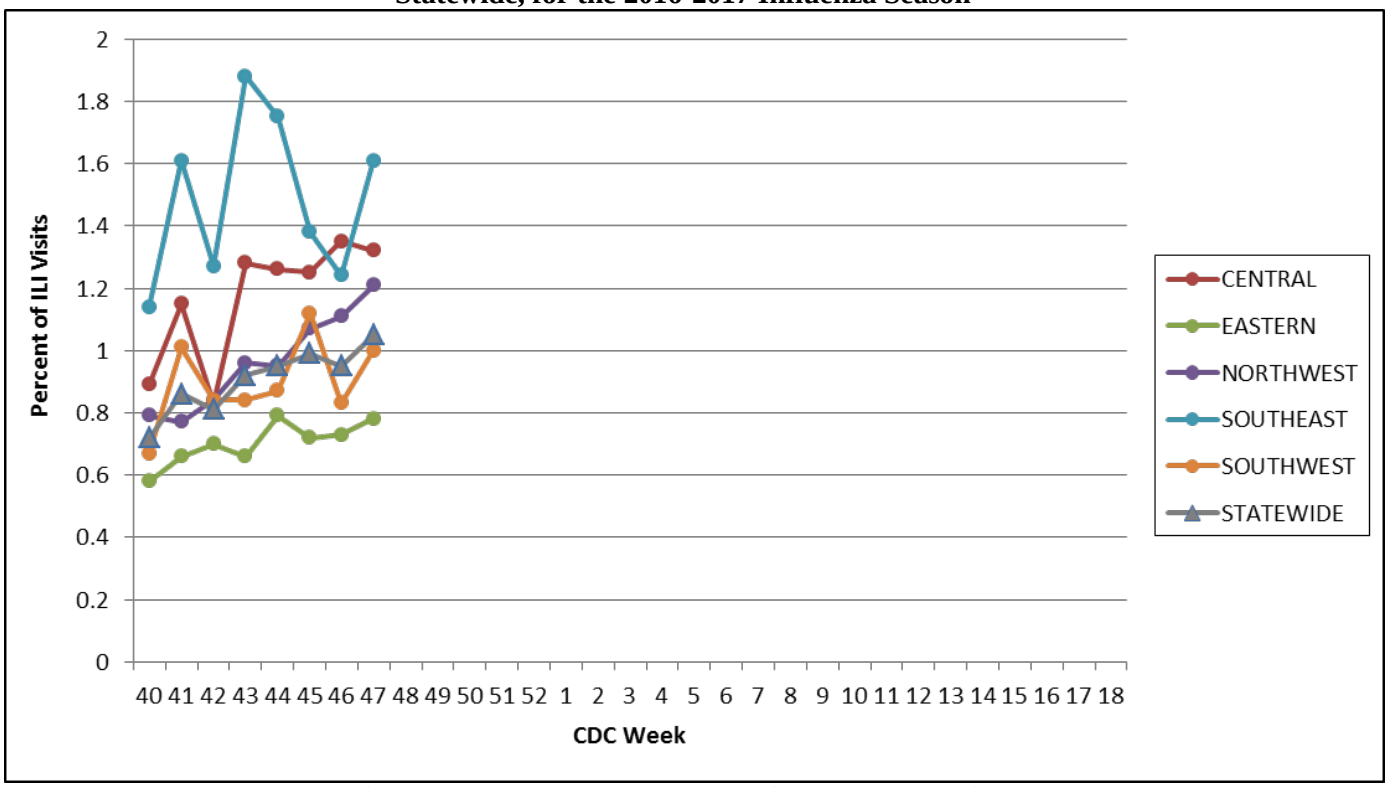
*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 47, 2016



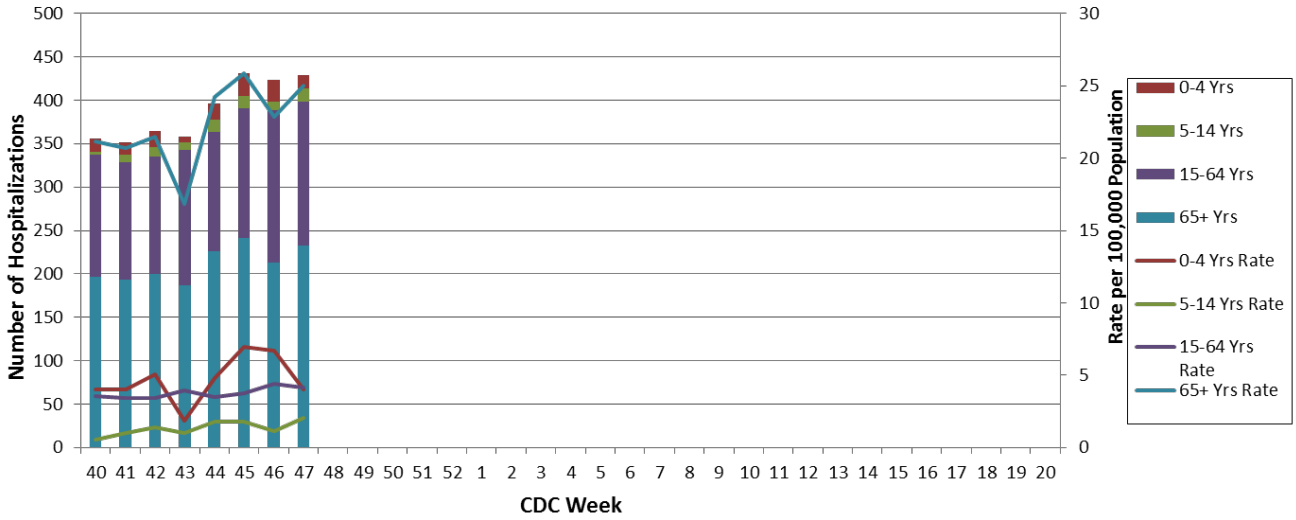
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 47, 2016



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 48: November 27 – December 3, 2016

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Sporadic[2].
- A season-to-date total of 480 laboratory-positive[3] influenza cases (261 influenza A, 202 influenza B, and 17 untyped) have been reported in Missouri as of Week 48. The influenza type for reported cases season-to-date includes 54% influenza A, 42% influenza B, and 4% untyped. Sixty-eight laboratory-positive[3] influenza cases (47 influenza A and 21 influenza B) were reported during Week 48. No laboratory-confirmed cases of influenza were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 48.
- Influenza-like illness (ILI) activity is above baseline for the Missouri Outpatient ILI Surveillance Network (ILINet) and below baseline for the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 2.00% and 1.07% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories was low.
- No influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 47, 29 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 420 P&I associated deaths in Missouri.[5]
- No influenza or ILI-associated outbreaks or school closures have been reported in Missouri, to date, this influenza season.
- Influenza activity increased slightly, but remained low in the U.S. during Week 47. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Sporadic is defined as: Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2gaqqAf. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 48**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 48**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 48 (November 27 – December 3, 2016)

Influenza Type	Week 46	Week 47	Week 48	2016-2017* Season-to-Date
Influenza A	28	38	47	261
Influenza B	22	34	21	202
Influenza Unknown Or Untyped	1	1	0	17
Total	51	73	68	480

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 48 (November 27 – December 3, 2016)

Age Group	Week 48 Cases	Week 48 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	12	3	76	20
05-14	9	1	69	9
15-64	36	1	263	7
65+	11	1	72	8
Total	68	1	480	8

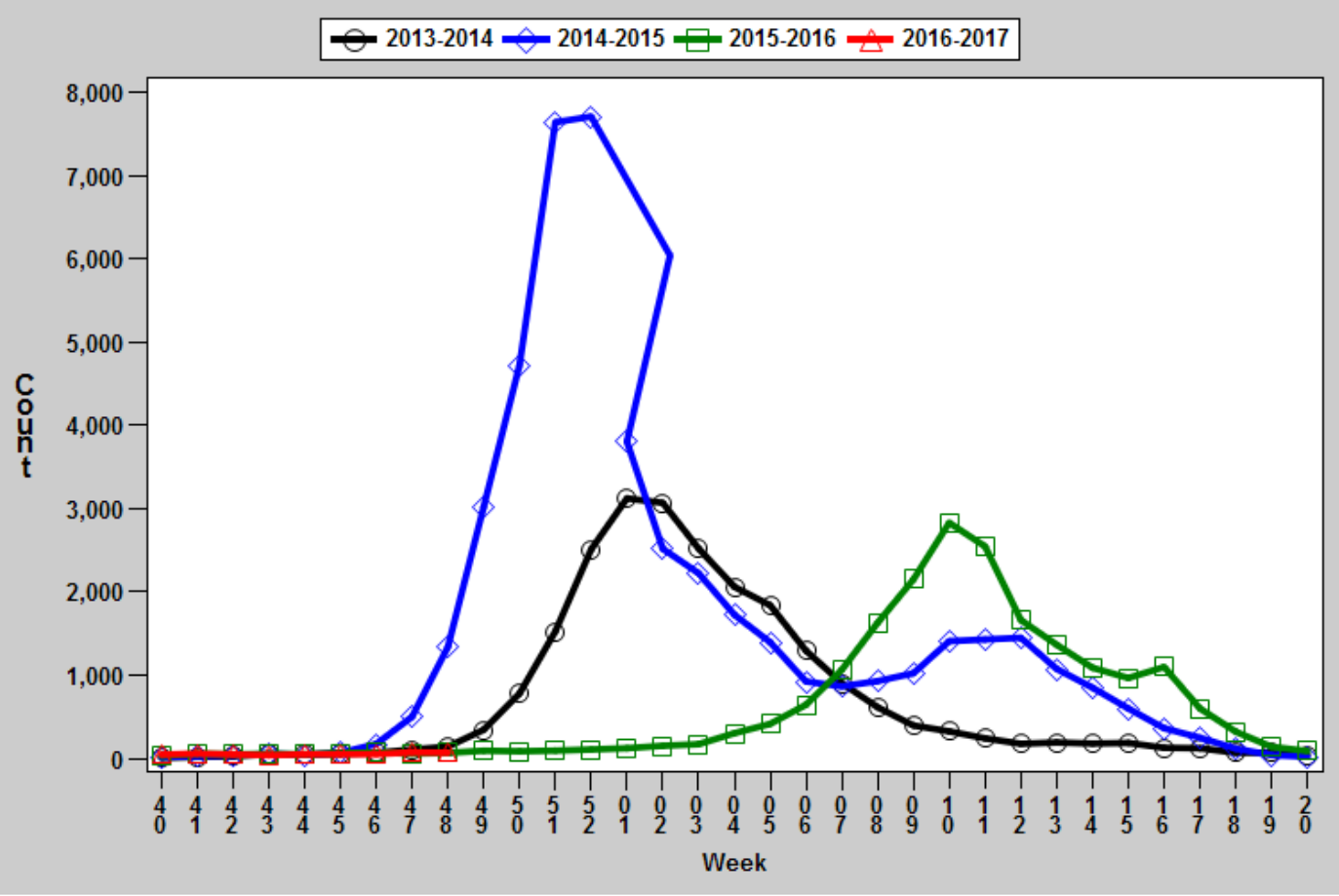
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 48 (November 27 – December 3, 2016)

District	Week 48 Cases	Week 48 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	7	1	60	9
EA	14	1	82	4
NW	17	1	164	10
SE	8	2	71	15
SW	22	2	103	10
Total	68	1	480	8

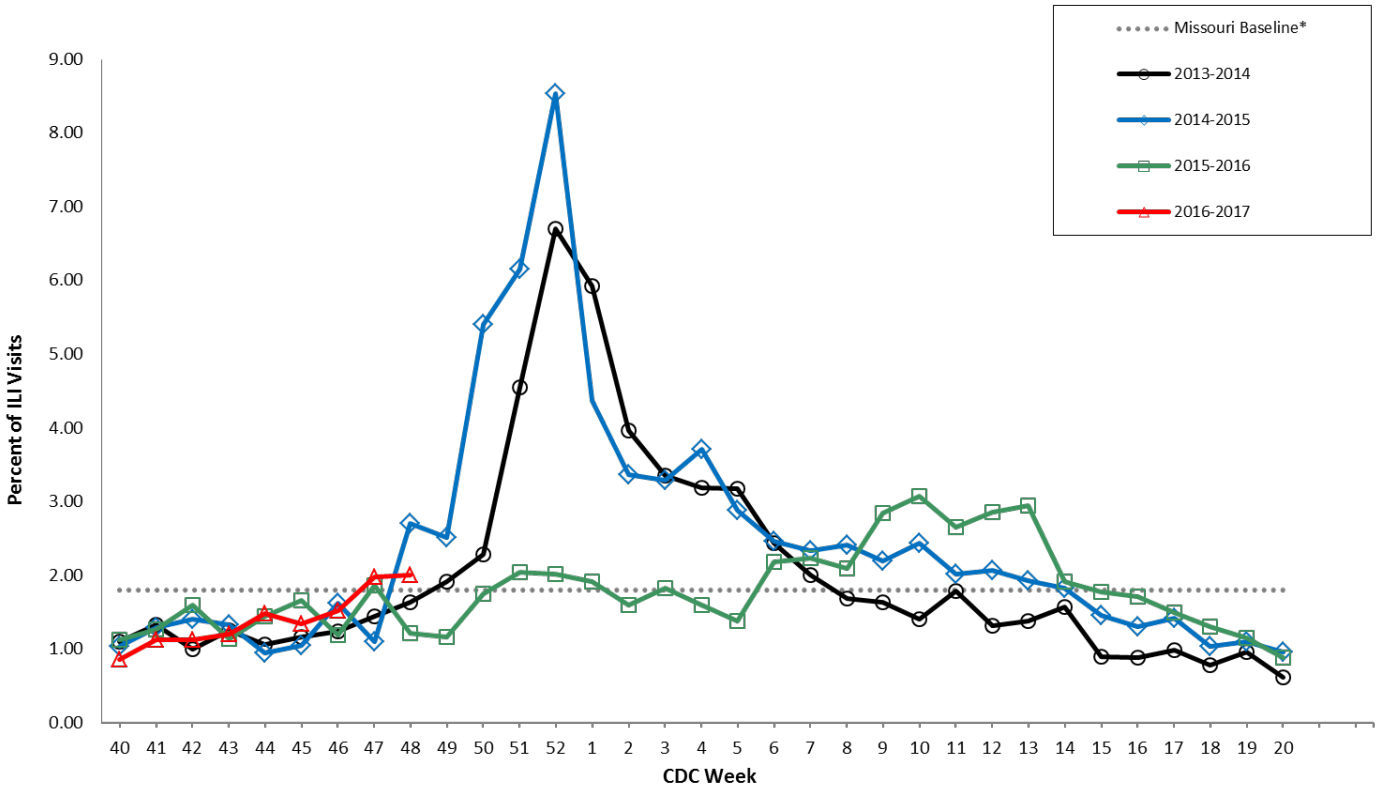
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*



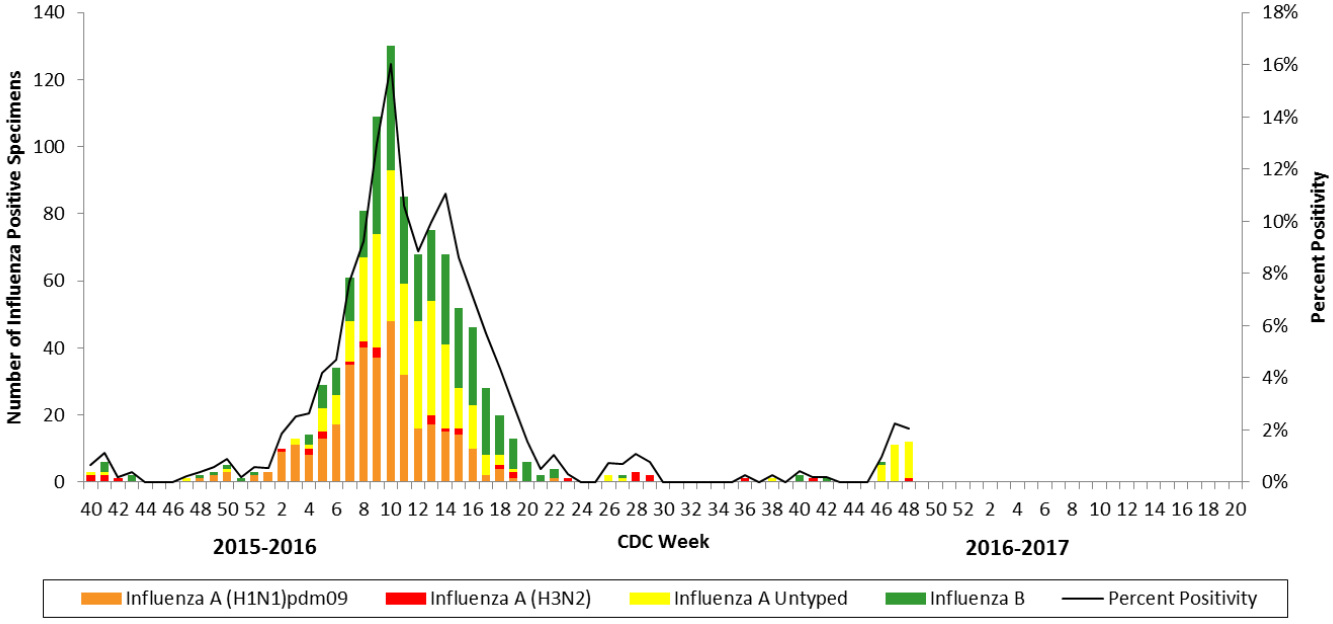
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



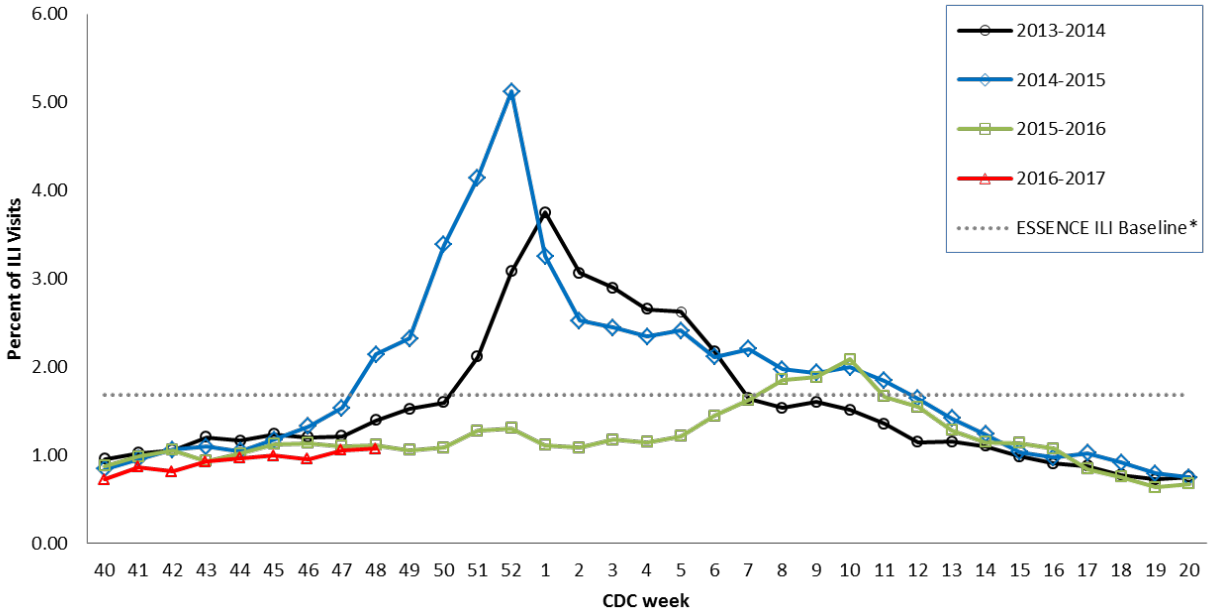
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons

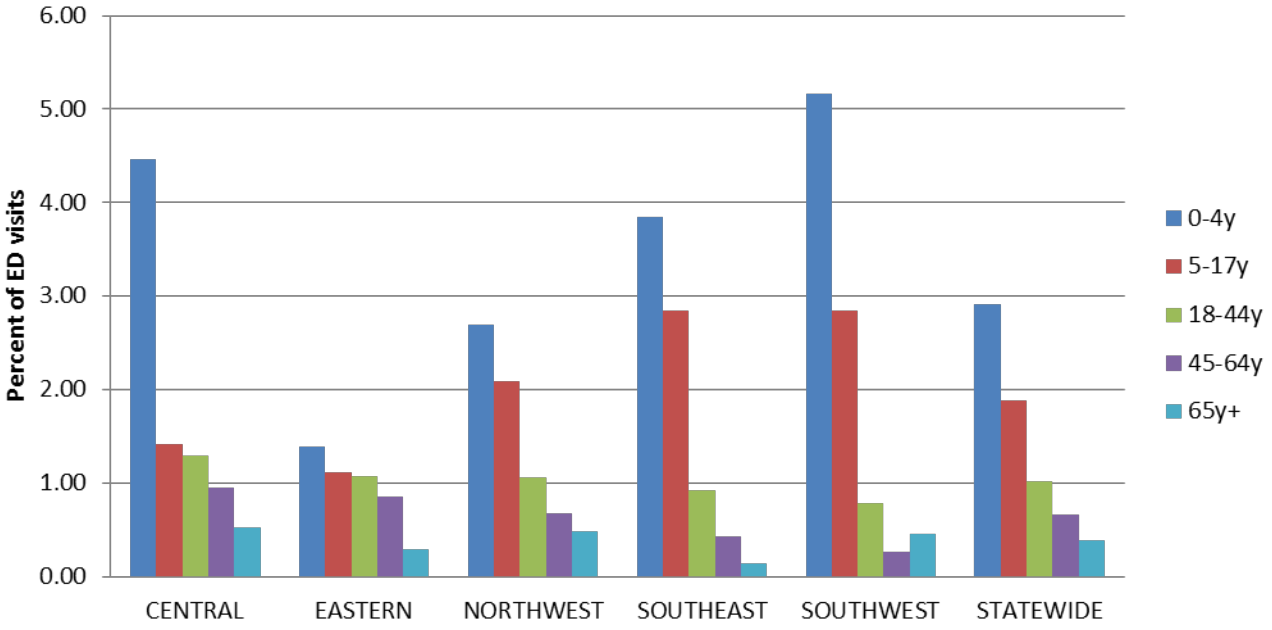


*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.

Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

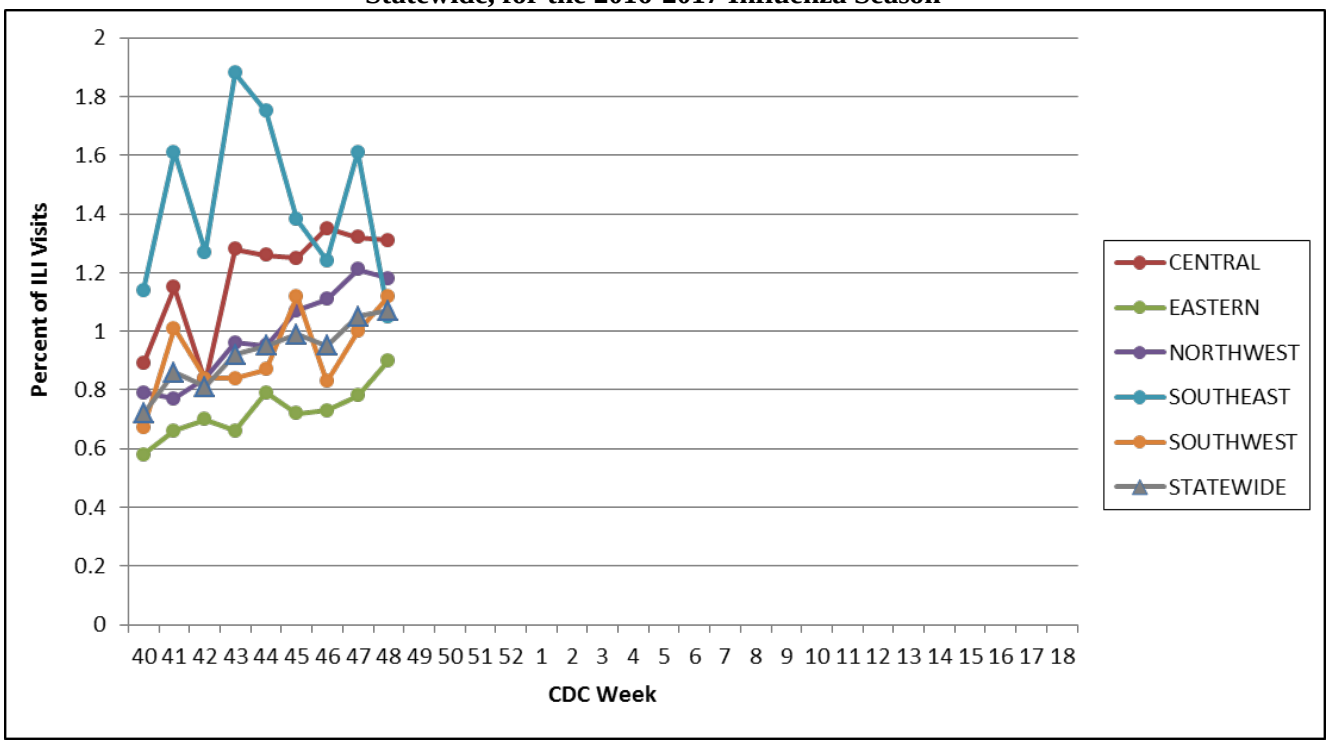
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 48, 2016



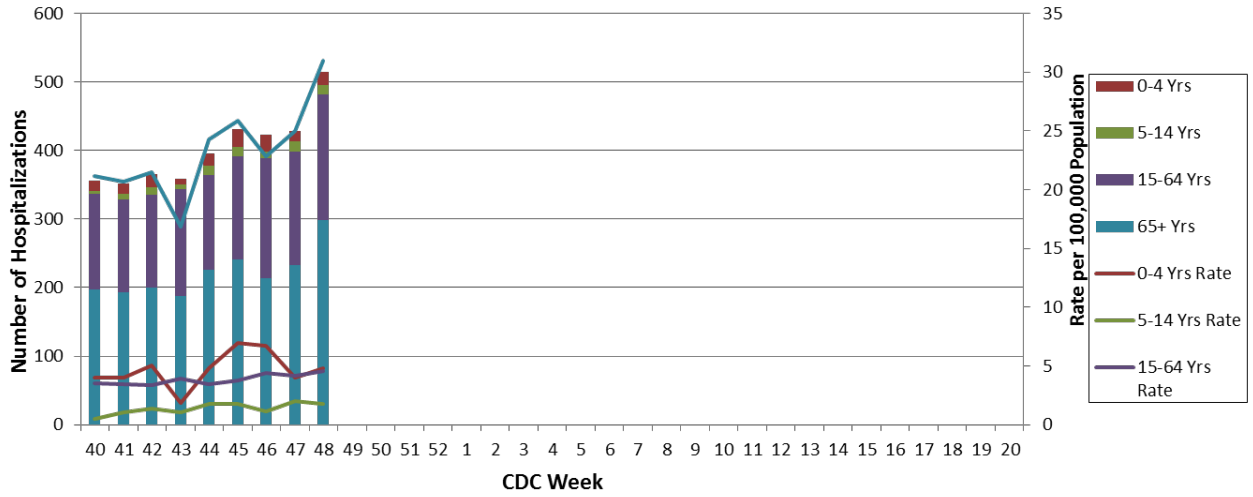
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 48, 2016



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 49: December 4 – December 10, 2016

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Sporadic[2].
- A season-to-date total of 606 laboratory-positive[3] influenza cases (349 influenza A, 235 influenza B, and 22 untyped) have been reported in Missouri as of Week 49. The influenza type for reported cases season-to-date includes 57% influenza A, 39% influenza B, and 4% untyped. Eighty-six laboratory-positive[3] influenza cases (62 influenza A, 23 influenza B, and one untyped) were reported during Week 49. No laboratory-confirmed cases of influenza were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 49.
- Influenza-like illness (ILI) activity is below baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 1.63% and 1.06% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories remained low.
- No influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 48, 67 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 487 P&I associated deaths in Missouri.[5]
- No influenza or ILI-associated outbreaks or school closures have been reported in Missouri, to date, this influenza season.
- Influenza activity increased slightly, but remained low in the U.S. during Week 48. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Sporadic is defined as: Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2htZ4oi. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 49**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 49**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 49 (December 4 – December 10, 2016)

Influenza Type	Week 47	Week 48	Week 49	2016-2017* Season-to-Date
Influenza A	39	72	62	349
Influenza B	38	27	23	235
Influenza Unknown Or Untyped	1	1	1	22
Total	78	100	86	606

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 49 (December 4 – December 10, 2016)

Age Group	Week 49 Cases	Week 49 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	9	2	90	24
05-14	15	2	89	11
15-64	44	1	333	8
65+	18	2	94	10
Total	86	1	606	10

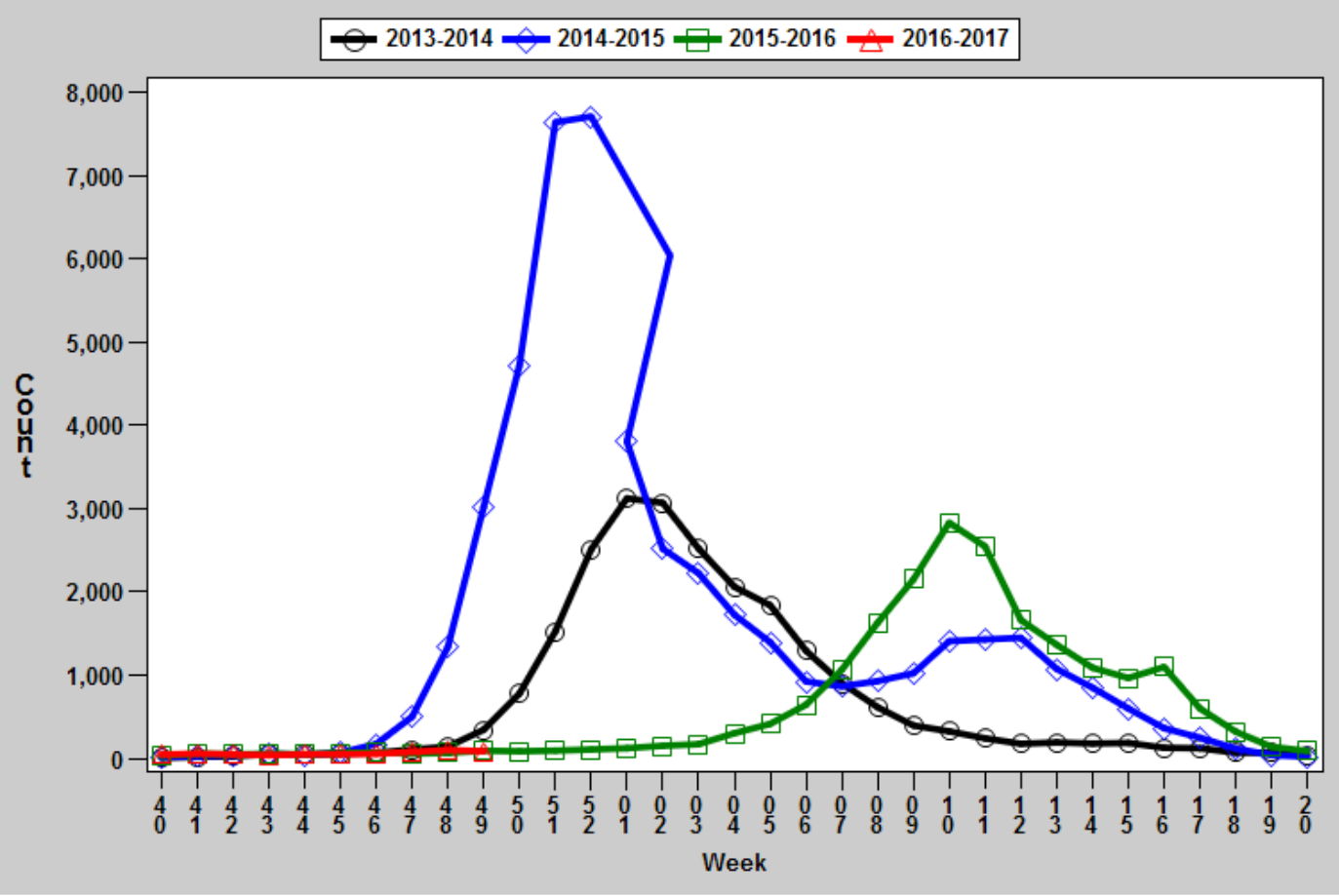
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 49 (December 4 – December 10, 2016)

District	Week 49 Cases	Week 49 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	10	2	74	11
EA	23	1	117	5
NW	17	1	199	13
SE	8	2	79	17
SW	28	3	137	13
Total	86	1	606	10

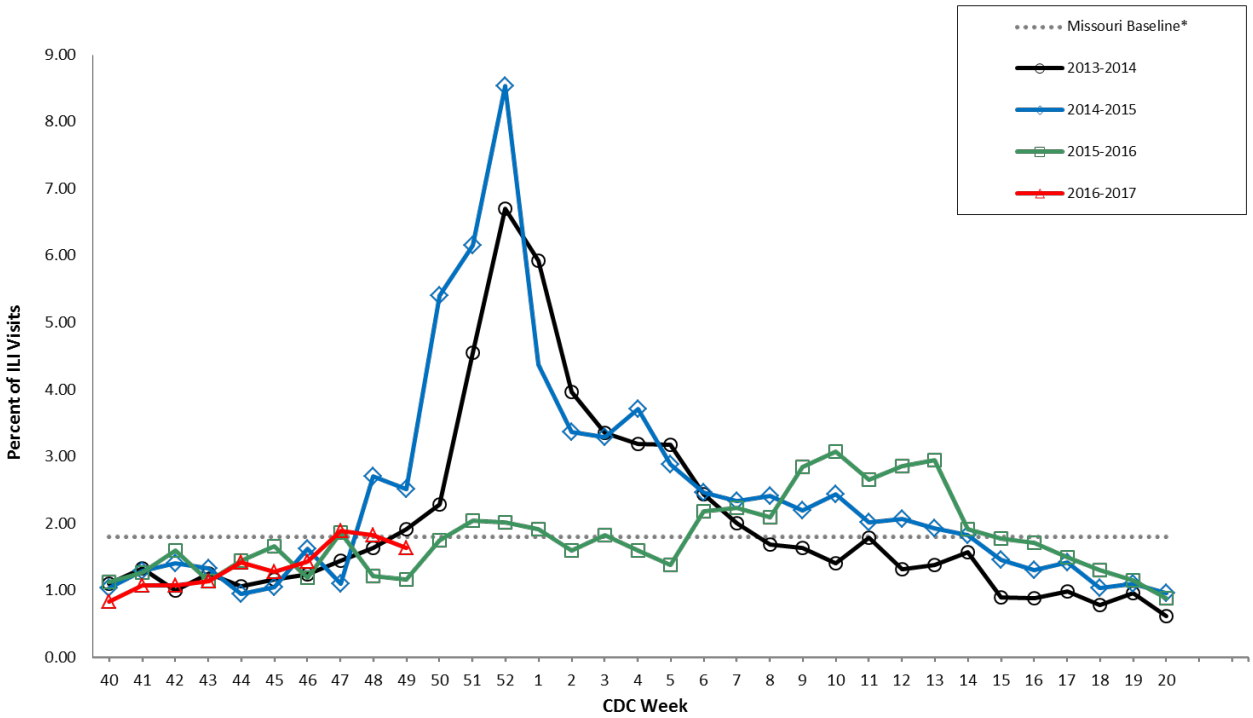
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*



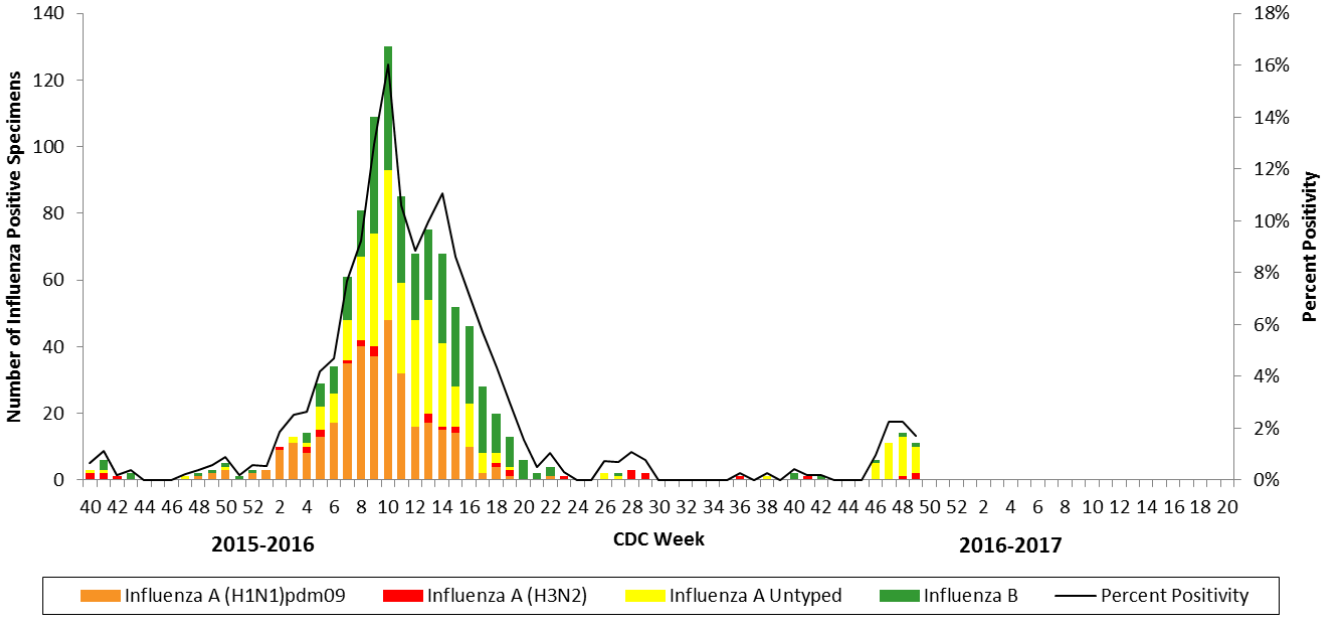
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



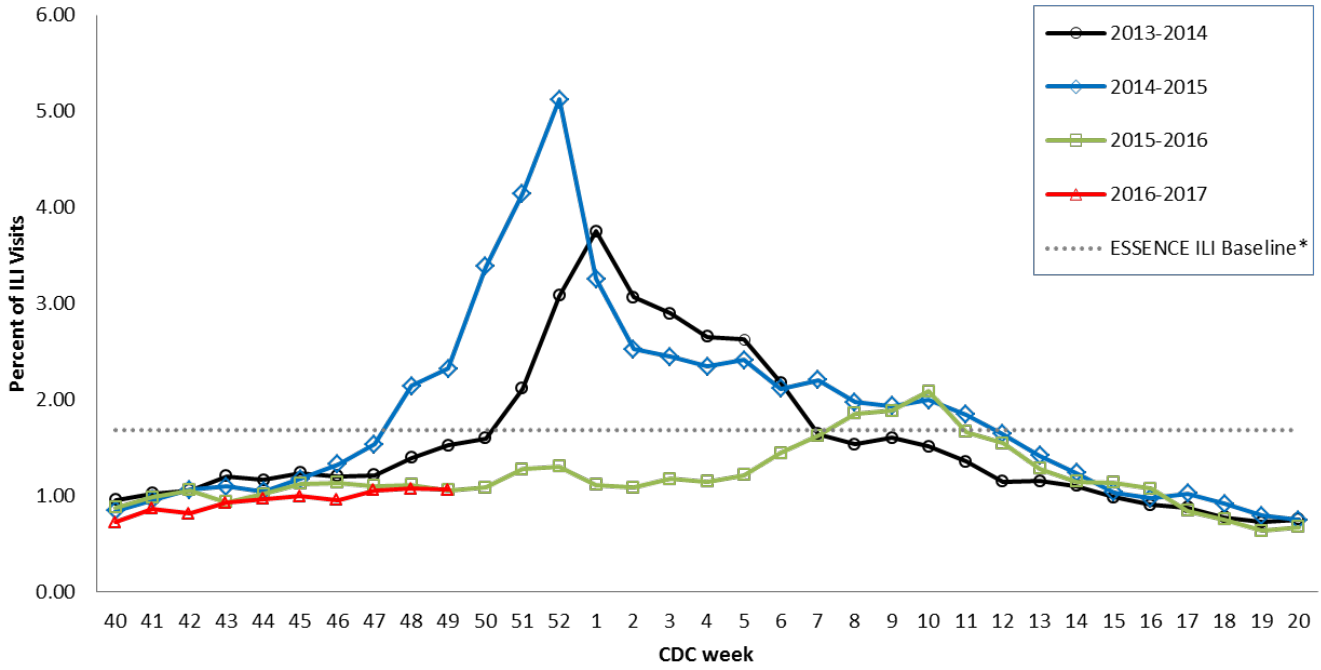
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



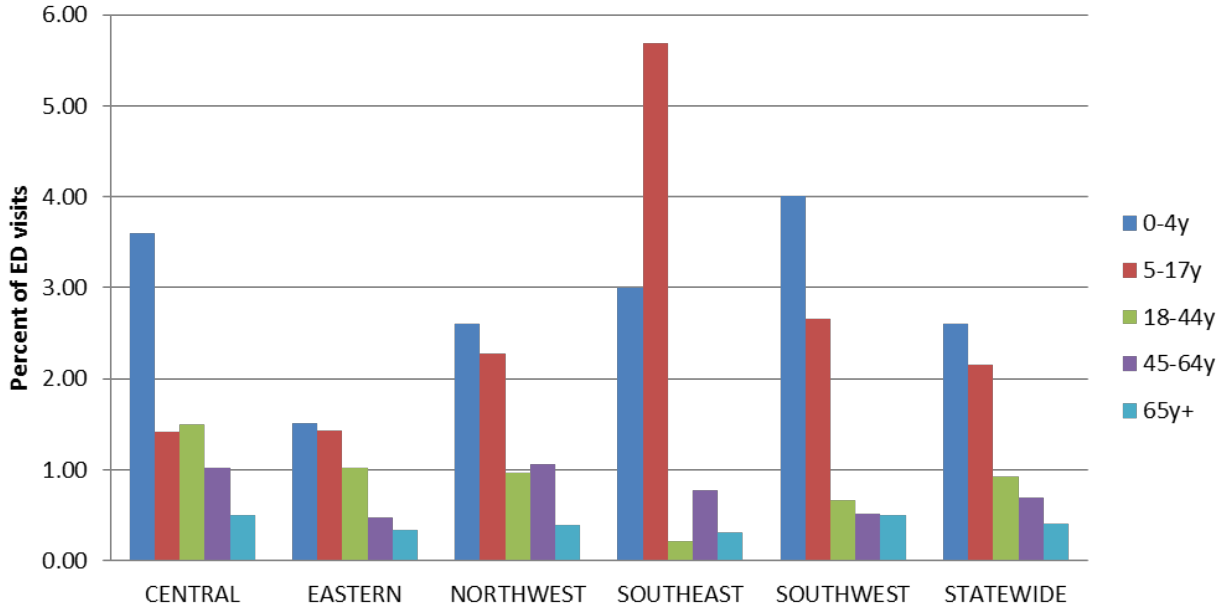
Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons



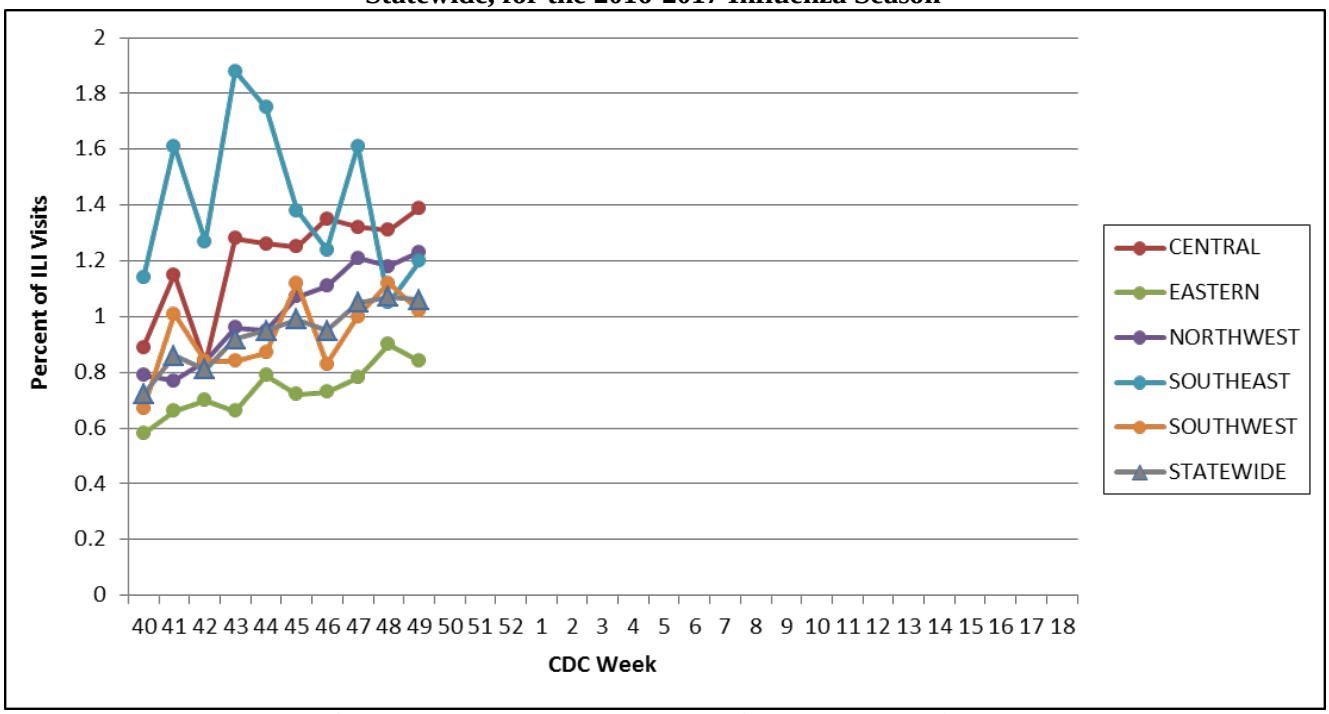
*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 49, 2016



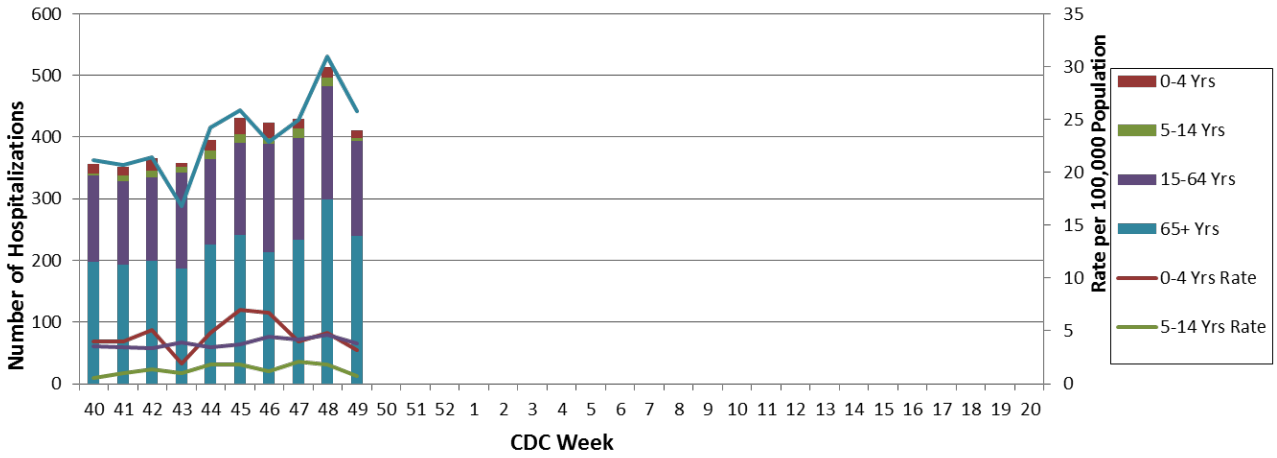
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 49, 2016



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 50: December 11 – December 17, 2016

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri increased to Local[2].
- A season-to-date total of 886 laboratory-positive[3] influenza cases (562 influenza A, 297 influenza B, and 27 untyped) have been reported in Missouri as of Week 50. The influenza type for reported cases season-to-date includes 63% influenza A, 34% influenza B, and 3% untyped. Two hundred and fifteen laboratory-positive[3] influenza cases (169 influenza A, 42 influenza B, and four untyped) were reported during Week 50. One laboratory-confirmed case of influenza A (H3) was reported by the Missouri State Public Health Laboratory (MSPHL) during Week 50.
- Influenza-like illness (ILI) activity is below baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 1.78% and 1.14% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased but remained low.
- No influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 49, 61 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 548 P&I associated deaths in Missouri.[5]
- One influenza or ILI-associated outbreak has been reported in Missouri, to date, this influenza season. No influenza or ILI-associated school closures have been reported in Missouri, to date, this influenza season.
- Influenza activity increased slightly in the U.S. during Week 49. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Local is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single region of the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2hUKpjT. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 50**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 50**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 50 (December 11 – December 17, 2016)

Influenza Type	Week 48	Week 49	Week 50	2016-2017* Season-to-Date
Influenza A	78	91	169	562
Influenza B	34	34	42	297
Influenza Unknown Or Untyped	2	1	4	27
Total	114	126	215	886

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 50 (December 11 – December 17, 2016)

Age Group	Week 50 Cases	Week 50 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	21	6	115	31
05-14	48	6	143	18
15-64	113	3	486	12
65+	33	4	142	15
Total	215	4	886	15

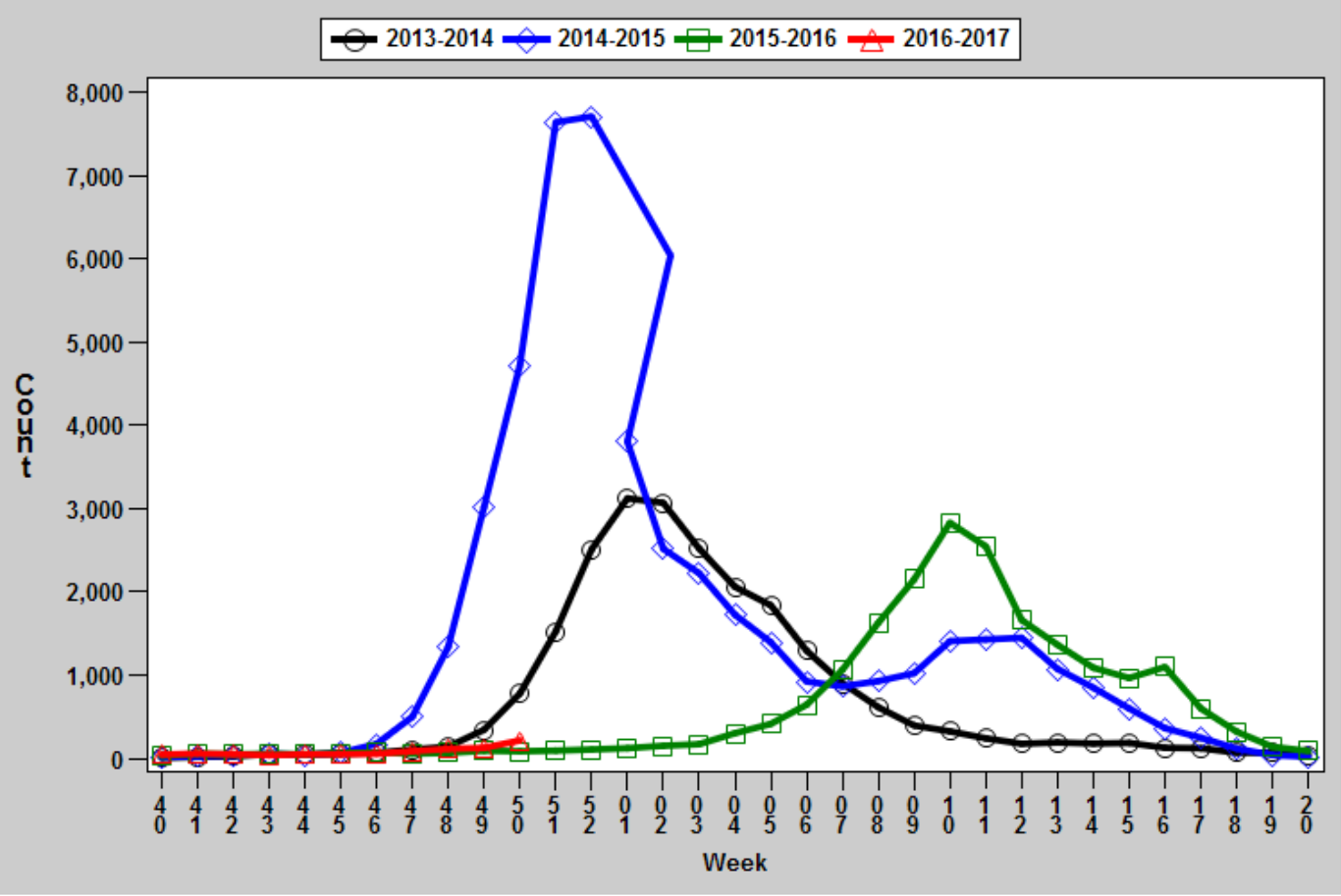
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 50 (December 11 – December 17, 2016)

District	Week 50 Cases	Week 50 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	59	9	140	21
EA	33	1	155	7
NW	54	3	282	18
SE	10	2	90	19
SW	59	5	219	20
Total	215	4	886	15

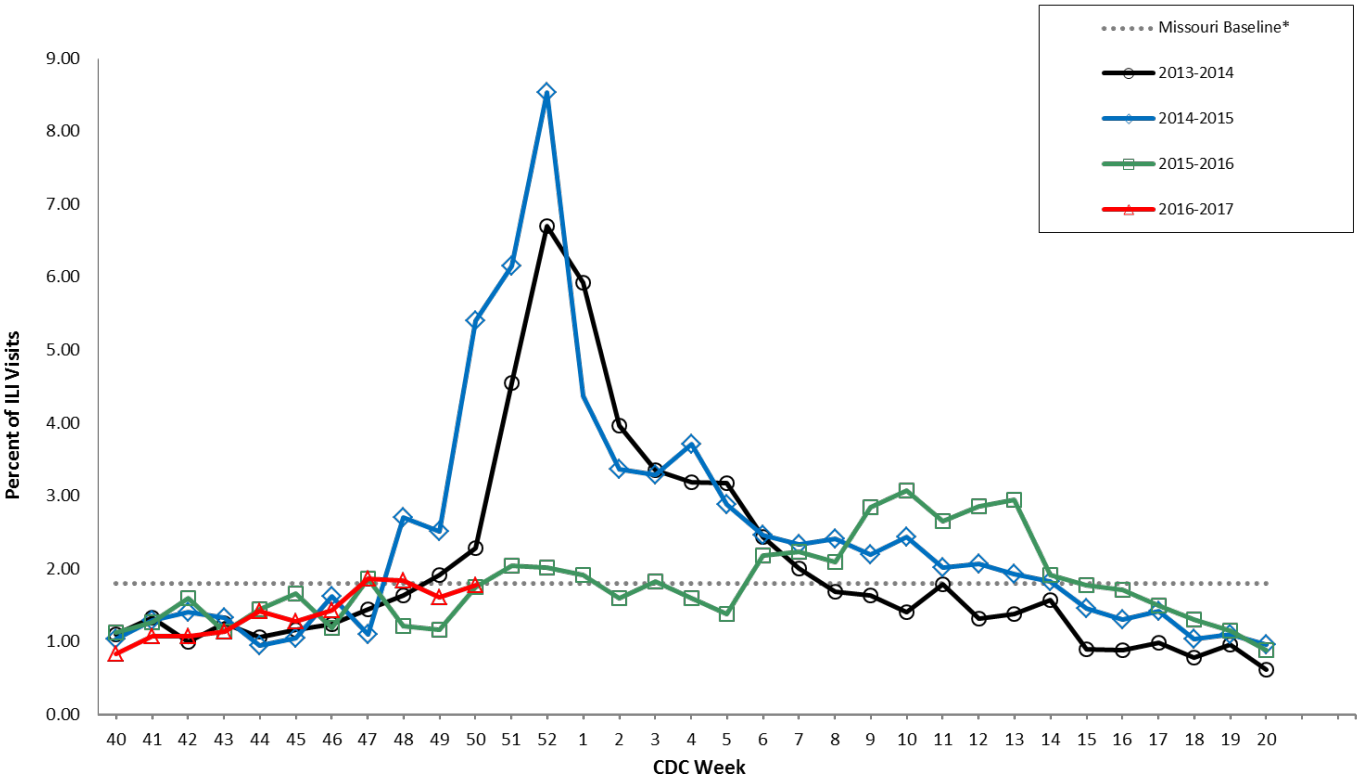
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*



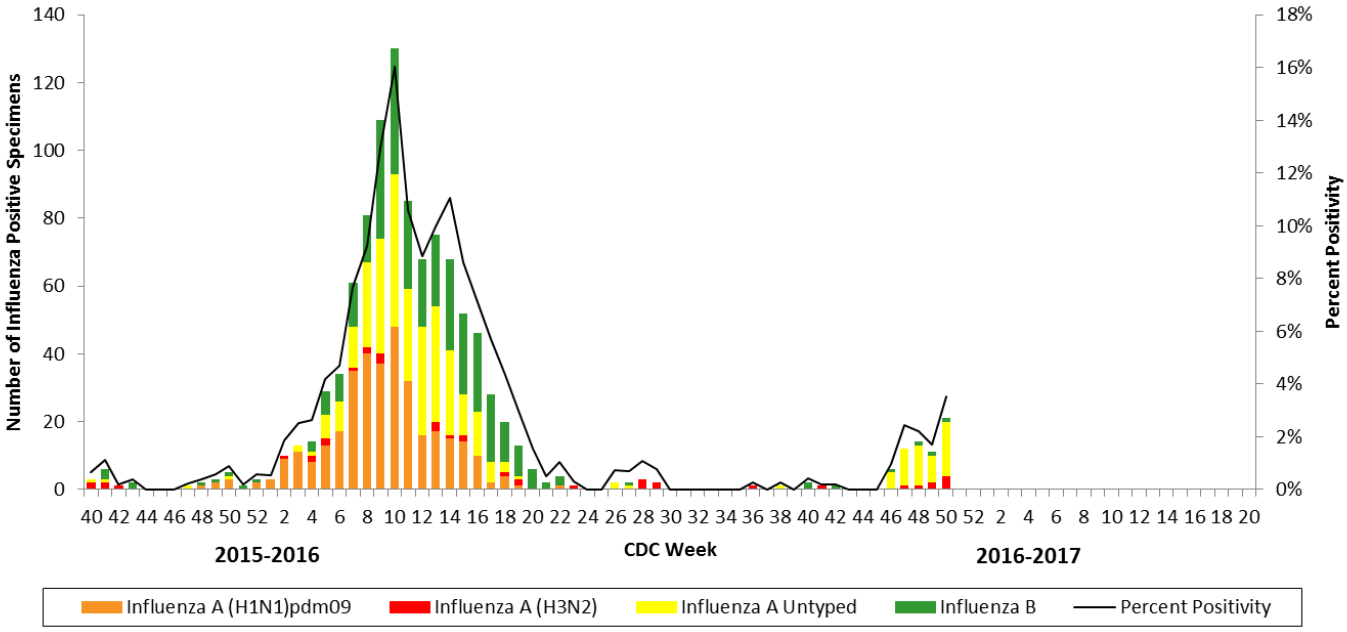
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



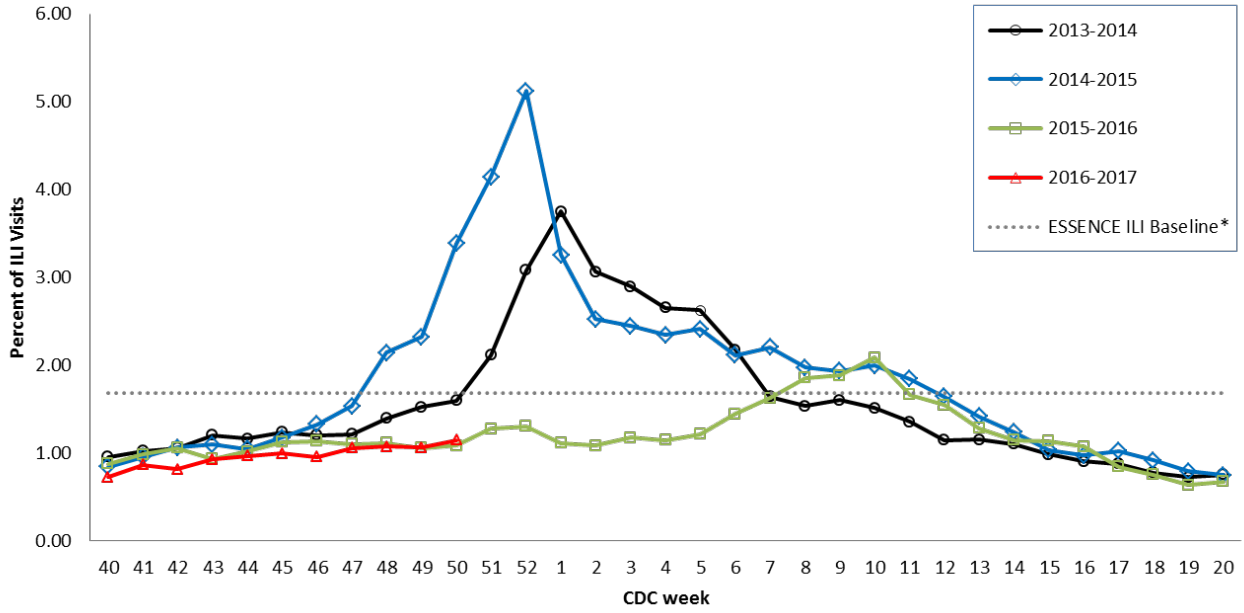
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons

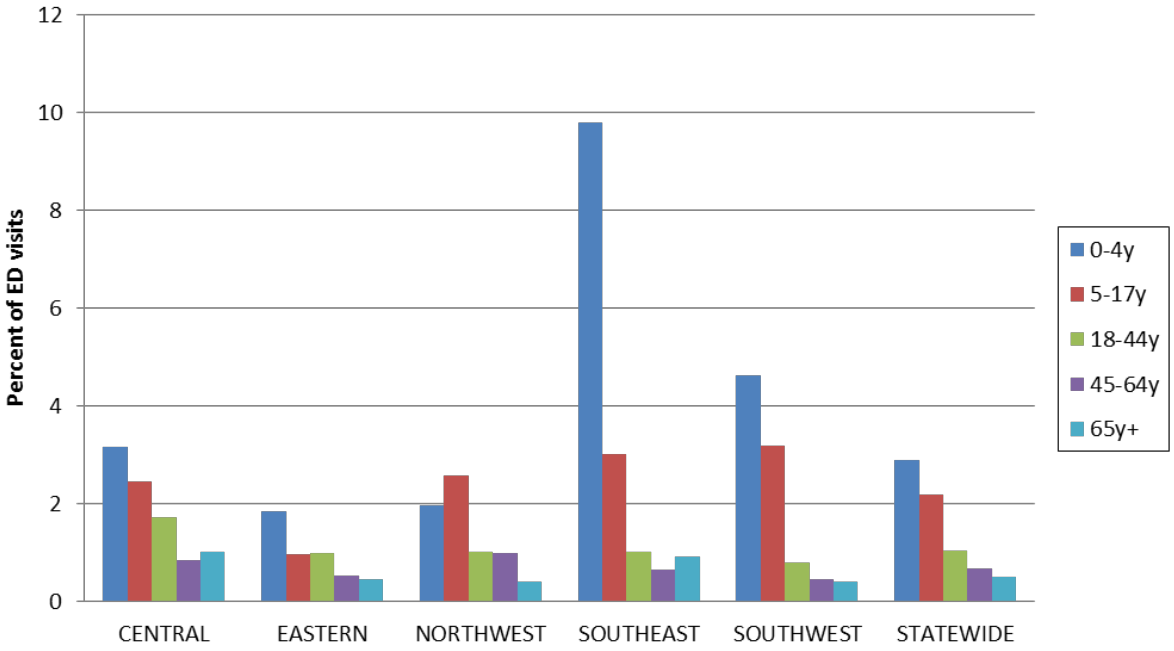


*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.

Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

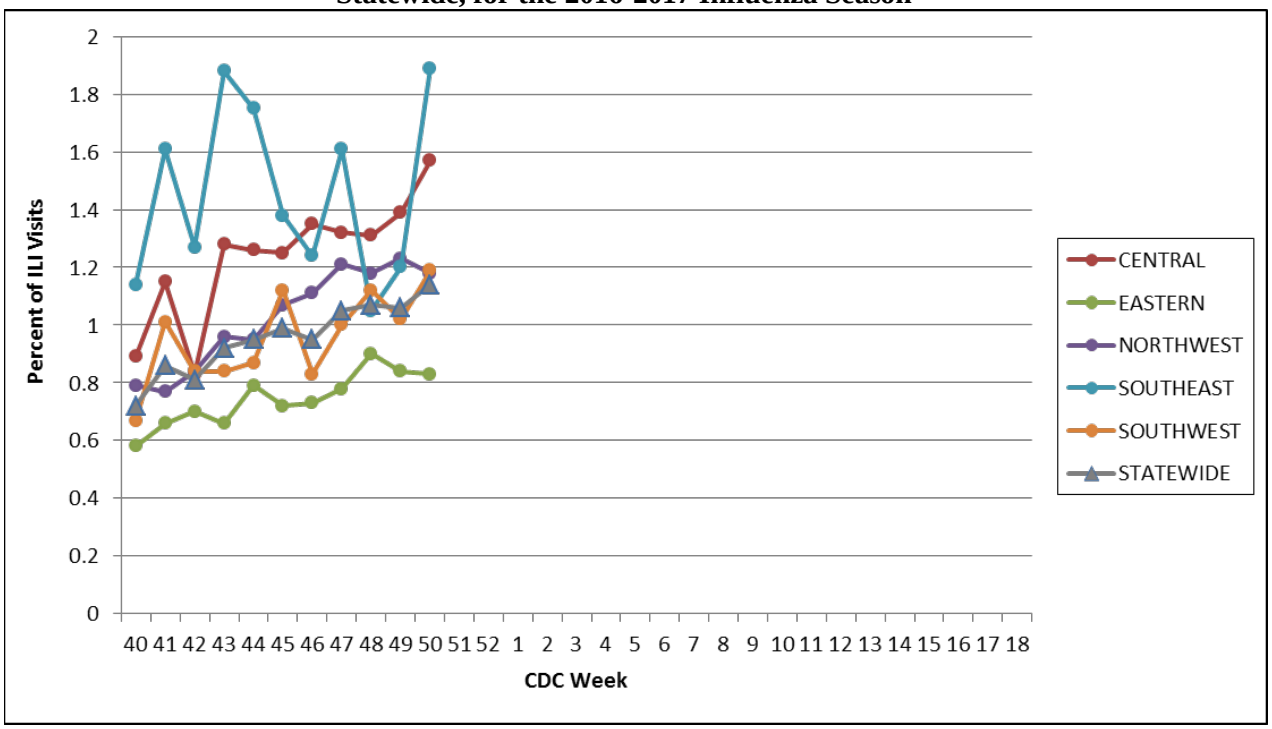
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 50, 2016



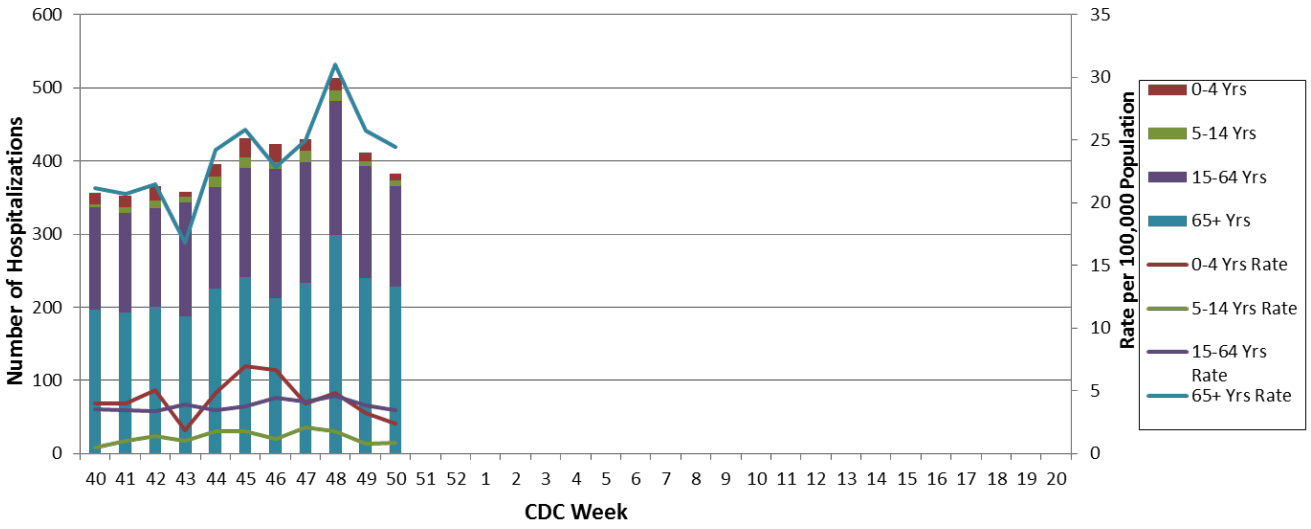
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 50, 2016



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
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World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 51: December 18 – December 24, 2016

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Local[2].

- A season-to-date total of 1,157 laboratory-positive[3] influenza cases (783 influenza A, 336 influenza B, and 38 untyped) have been reported in Missouri as of Week 51. The influenza type for reported cases season-to-date includes 68% influenza A, 29% influenza B, and 3% untyped. Two hundred and four laboratory-positive[3] influenza cases (170 influenza A, 24 influenza B, and 10 untyped) were reported during Week 51. Five laboratory-confirmed cases of influenza A (H3) were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 51.

- Influenza-like illness (ILI) activity is above baseline for the Missouri Outpatient ILI Surveillance Network (ILINet) and below baseline for the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 2.86% and 1.43% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased.

- No influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 50, 59 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 607 P&I associated deaths in Missouri.[5]

- Two influenza or ILI-associated outbreaks have been reported in Missouri, to date, this influenza season. No influenza or ILI-associated school closures have been reported in Missouri, to date, this influenza season.

- Influenza activity increased slightly in the U.S. during Week 50. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Local is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single region of the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2hoEWjm. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 51**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 51**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 51 (December 18 – December 24, 2016)

Influenza Type	Week 49	Week 50	Week 51	2016-2017* Season-to-Date
Influenza A	98	211	170	783
Influenza B	38	49	24	336
Influenza Unknown Or Untyped	1	5	10	38
Total	137	265	204	1,157

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 51 (December 18 – December 24, 2016)

Age Group	Week 51 Cases	Week 51 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	23	6	148	40
05-14	54	7	216	28
15-64	95	2	617	16
65+	31	3	175	19
Total	204	3	1,157	19

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 51 (December 18 – December 24, 2016)

District	Week 51 Cases	Week 51 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	30	5	172	26
EA	32	1	211	9
NW	41	3	345	22
SE	36	8	129	27
SW	65	6	300	28
Total	204	3	1,157	19

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
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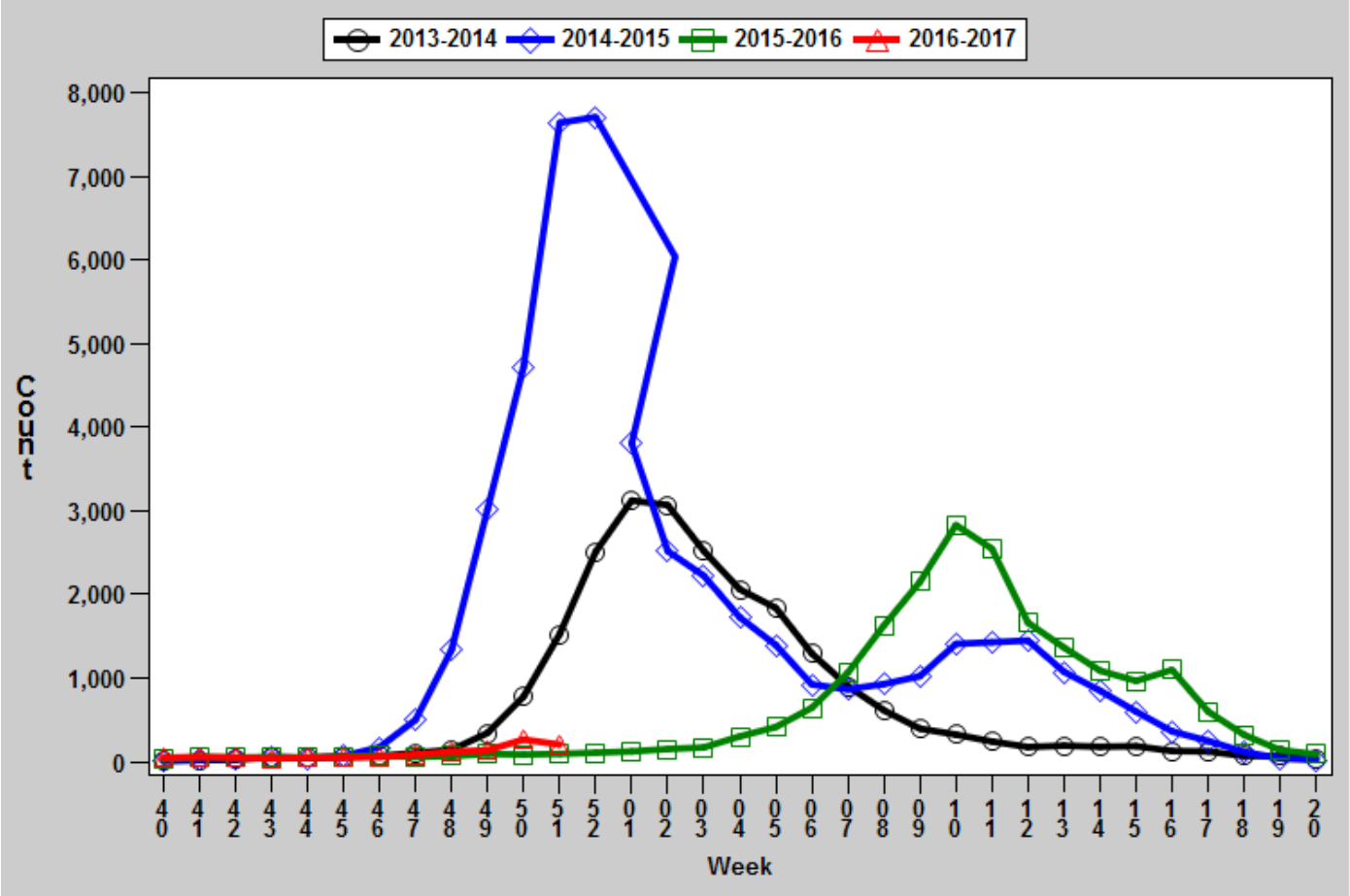
‡Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*



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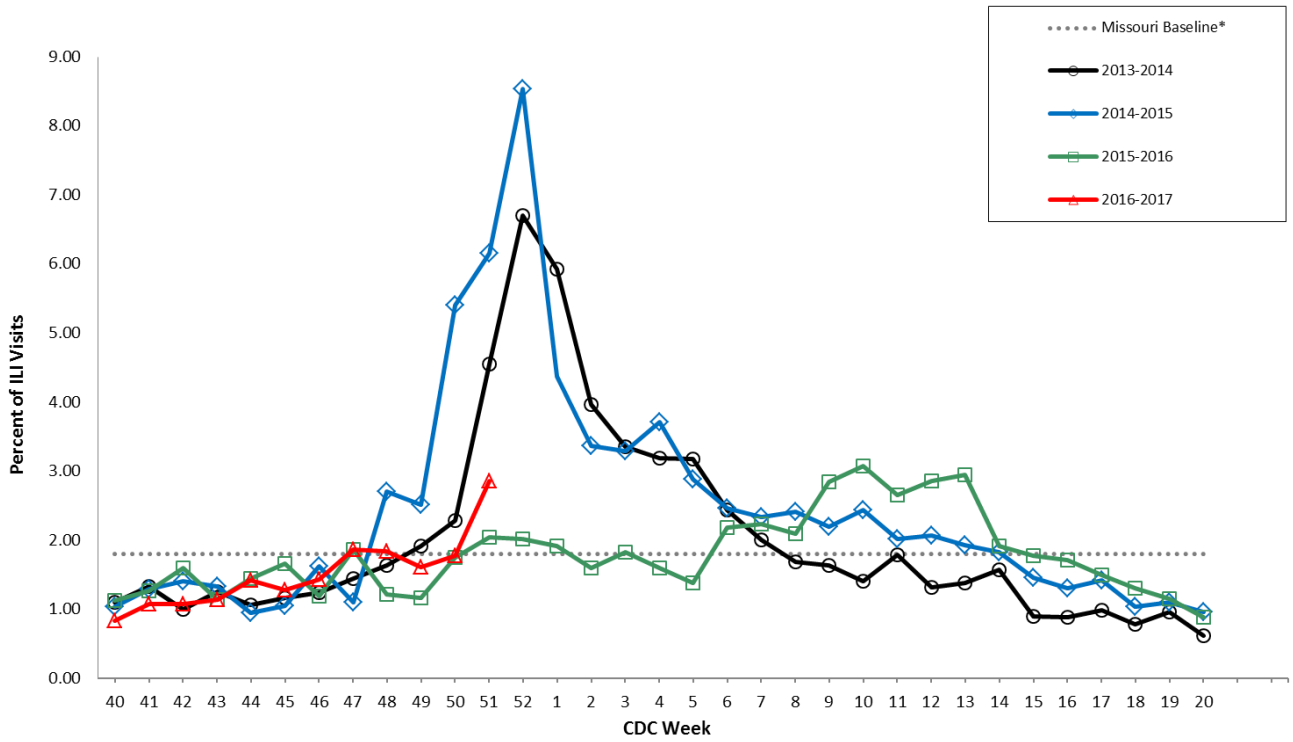
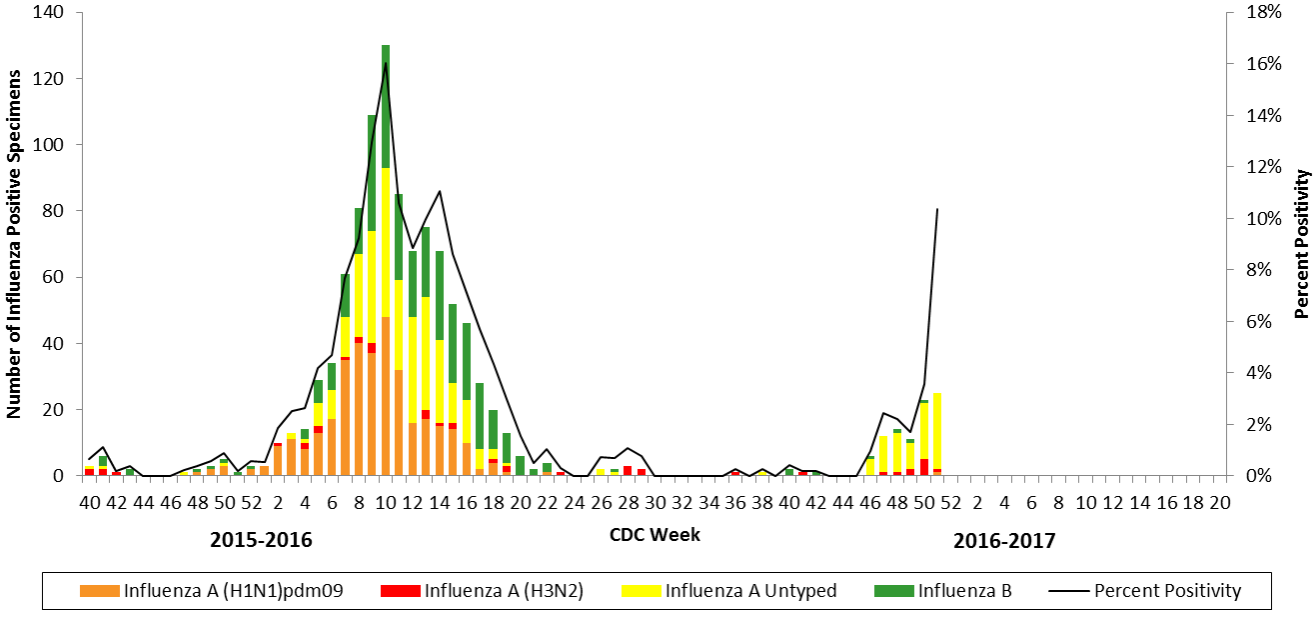
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



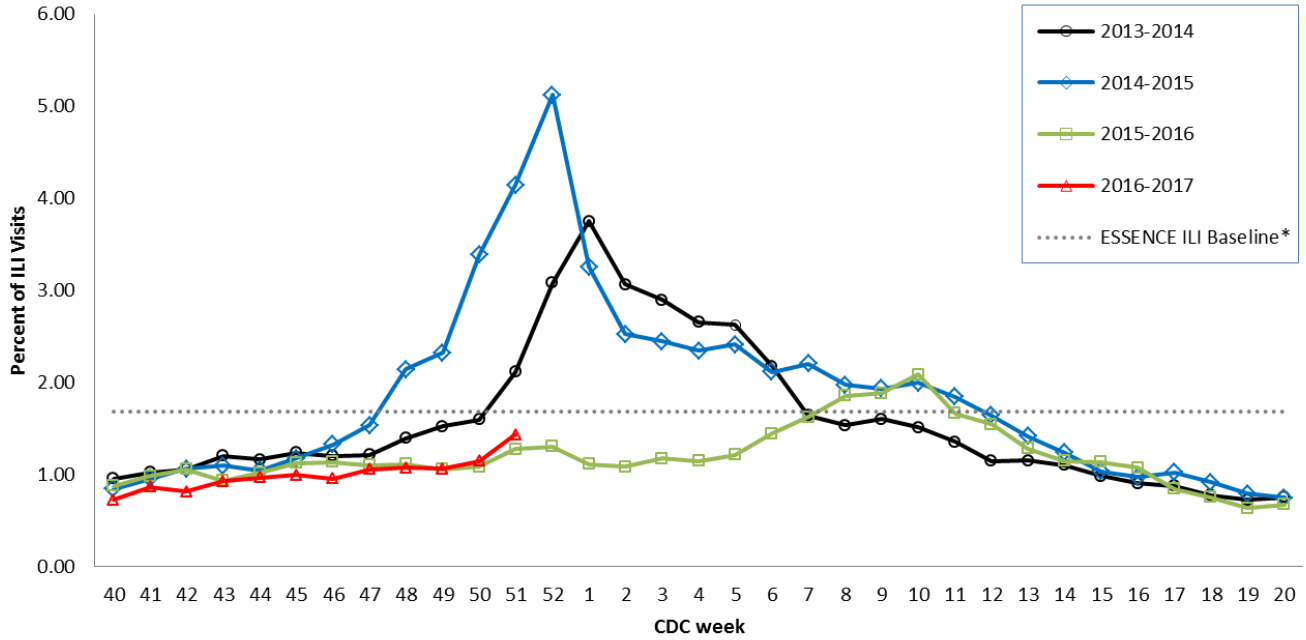
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



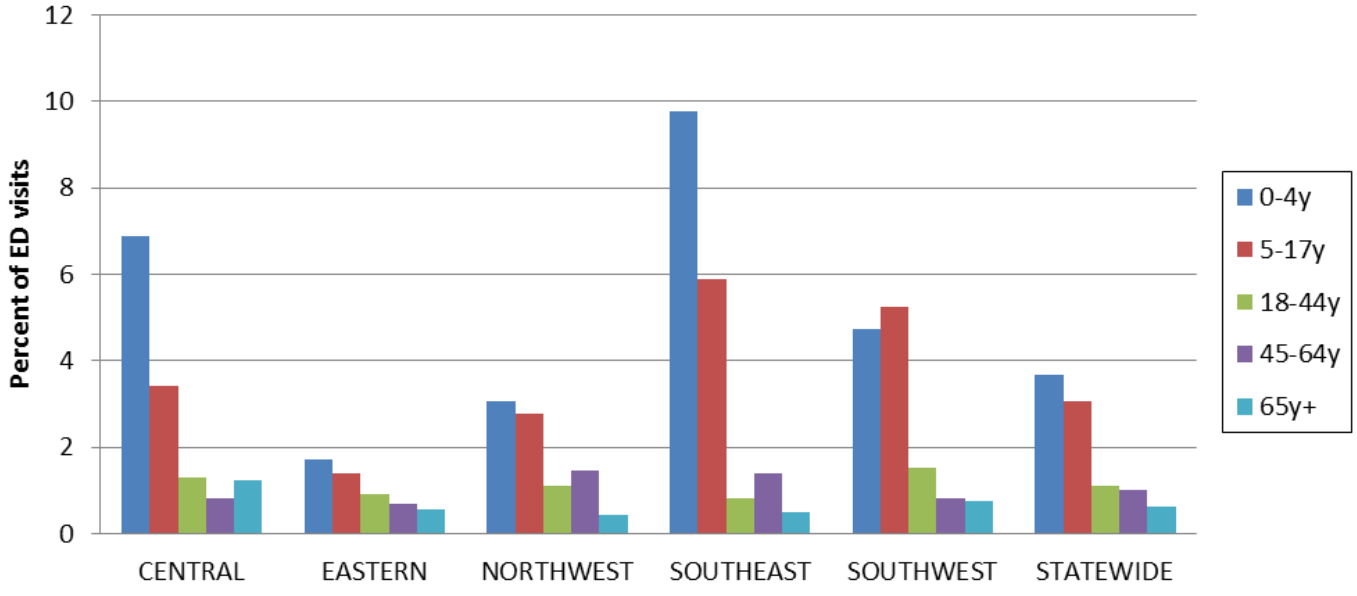
Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons



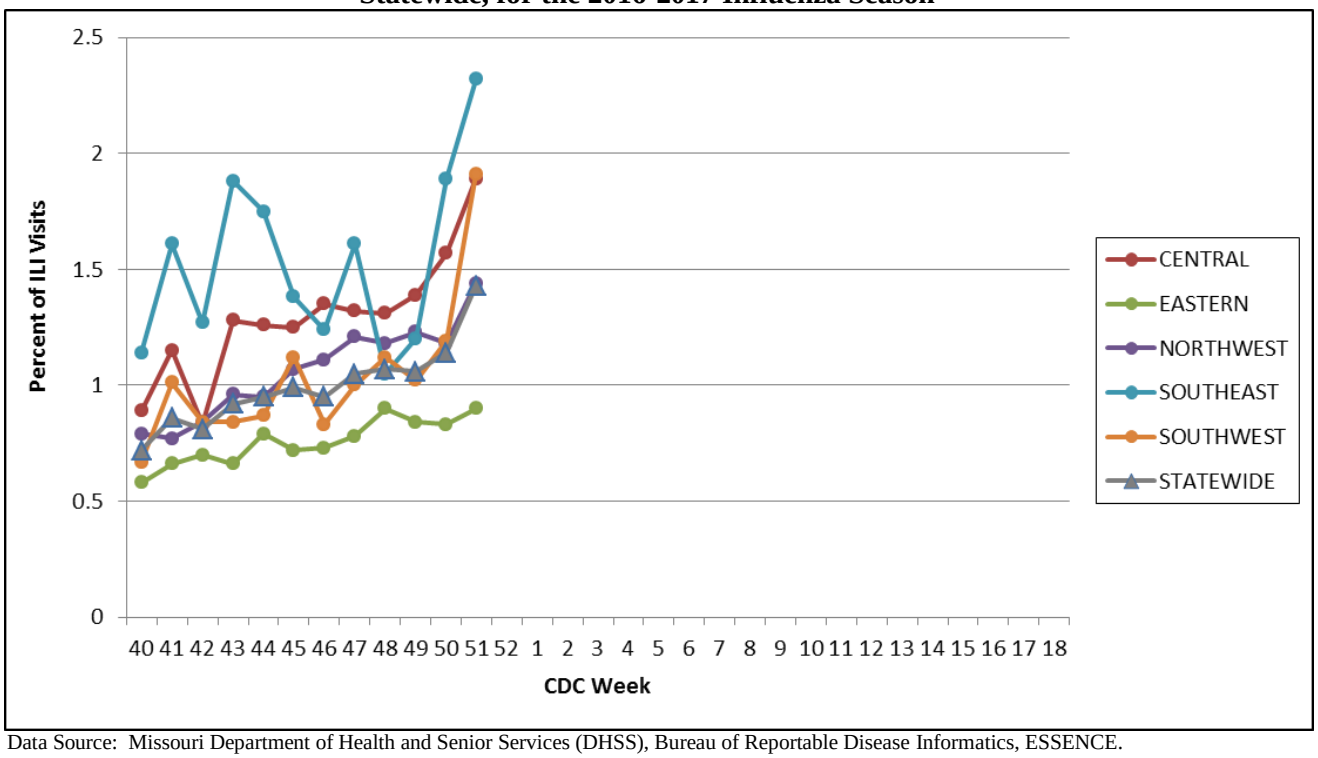
*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 51, 2016



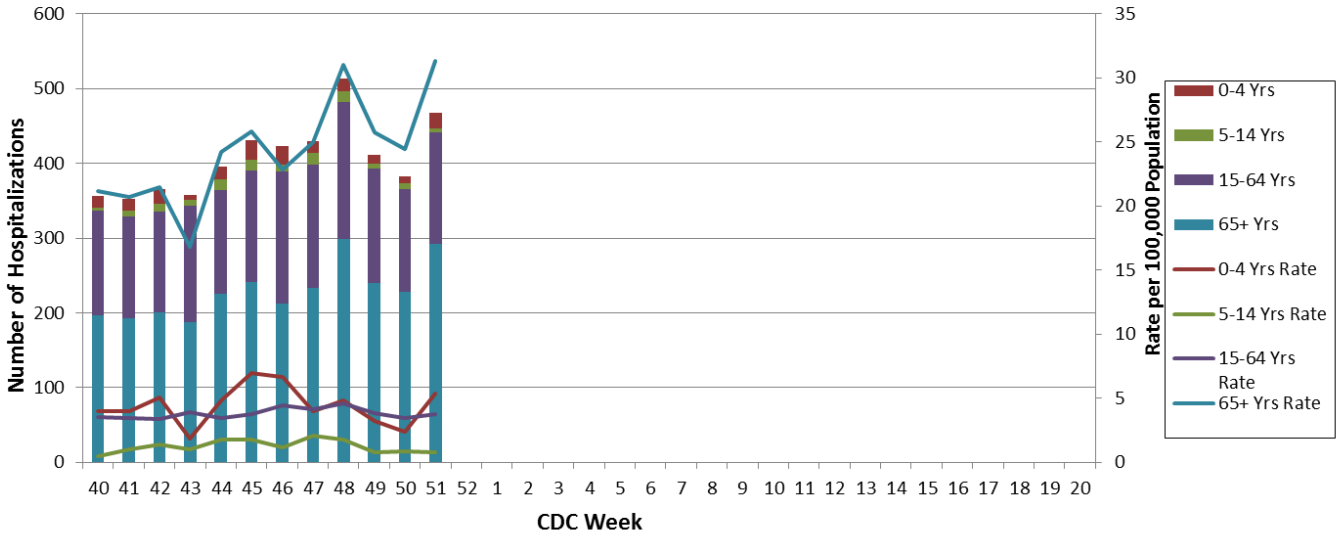
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 51, 2016



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

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World Health Organization: International Influenza Surveillance:
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Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 52: December 25 – December 31, 2016

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Local[2].

- A season-to-date total of 2,041 laboratory-positive[3] influenza cases (1,577 influenza A, 414 influenza B, and 50 untyped) have been reported in Missouri as of Week 52. The influenza type for reported cases season-to-date includes 77% influenza A, 20% influenza B, and 3% untyped. Five hundred and eighty-seven laboratory-positive[3] influenza cases (521 influenza A, 56 influenza B, and 10 untyped) were reported during Week 52. No laboratory-confirmed cases of influenza were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 52.

- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 7.18% and 1.92% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased.

- No influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 51, 65 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 672 P&I associated deaths in Missouri.[5]

- Two influenza or ILI-associated outbreaks have been reported in Missouri, to date, this influenza season. No influenza or ILI-associated school closures have been reported in Missouri, to date, this influenza season.

- Influenza activity increased in the U.S. during Week 51. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Local is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single region of the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2hS2ySN. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 52**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 52**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 52 (December 25 – December 31, 2016)

Influenza Type	Week 50	Week 51	Week 52	2016-2017* Season-to-Date
Influenza A	219	432	521	1,577
Influenza B	54	40	56	414
Influenza Unknown Or Untyped	6	11	10	50
Total	279	483	587	2,041

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 52 (December 25 – December 31, 2016)

Age Group	Week 52 Cases	Week 52 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	71	19	246	66
05-14	105	13	406	52
15-64	288	7	1,044	26
65+	123	13	344	37
Total	587	10	2,041	34

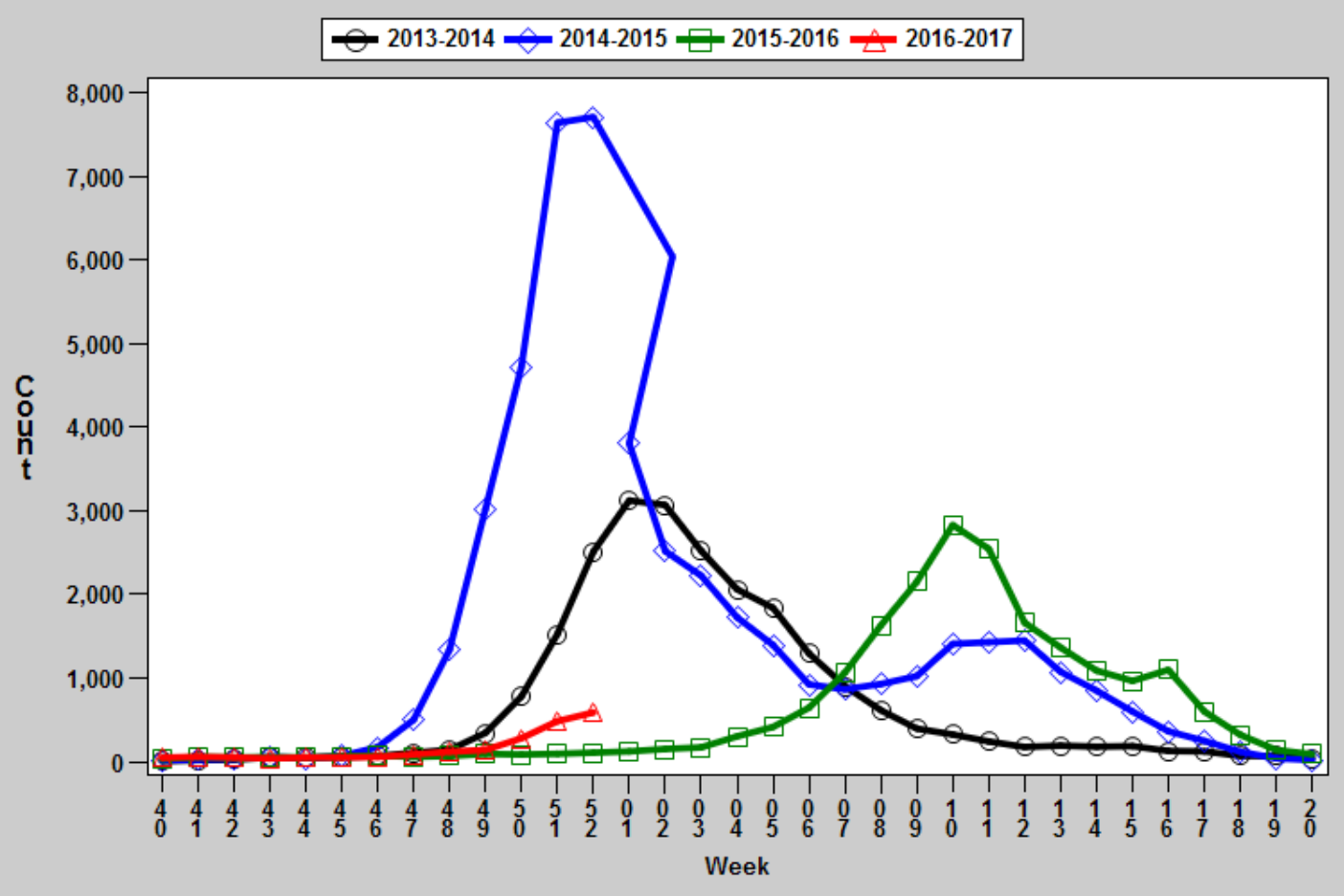
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 52 (December 25 – December 31, 2016)

District	Week 52 Cases	Week 52 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	136	21	379	57
EA	108	5	340	15
NW	110	7	487	31
SE	51	11	193	41
SW	182	17	642	60
Total	587	10	2,041	34

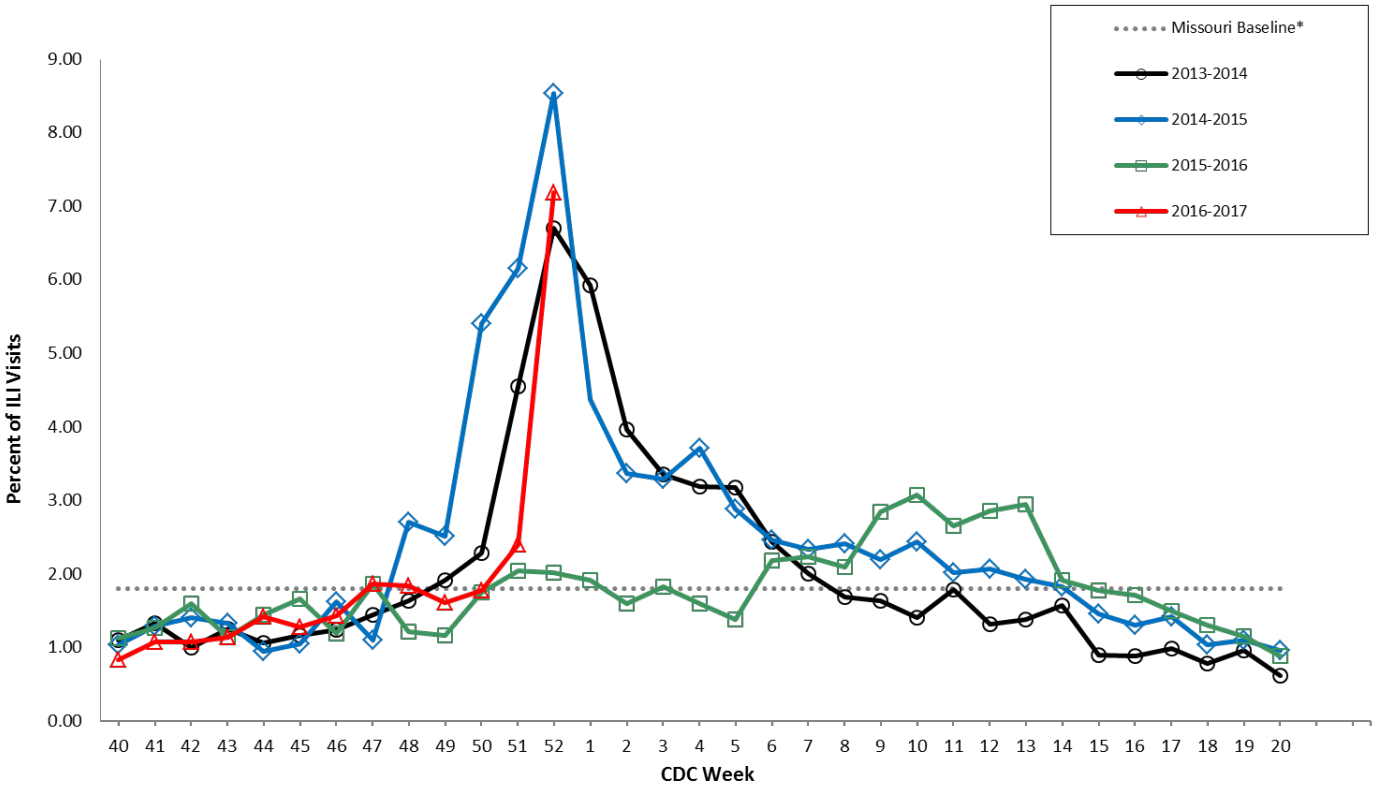
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*



†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

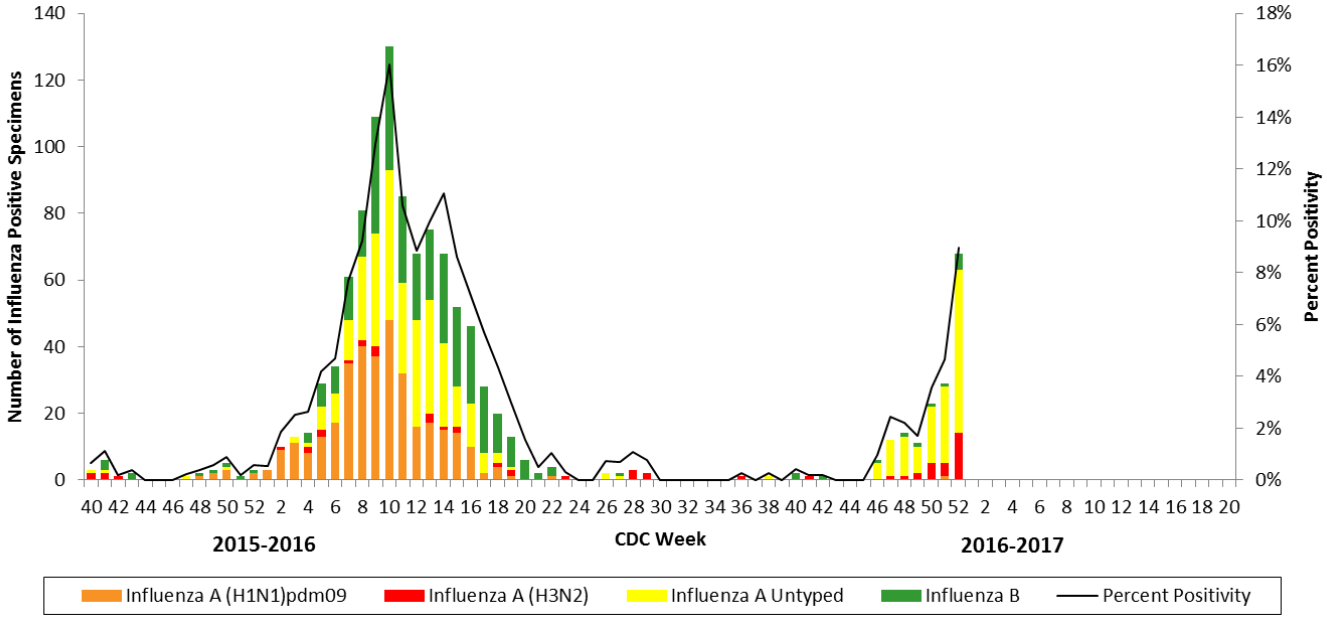
Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).

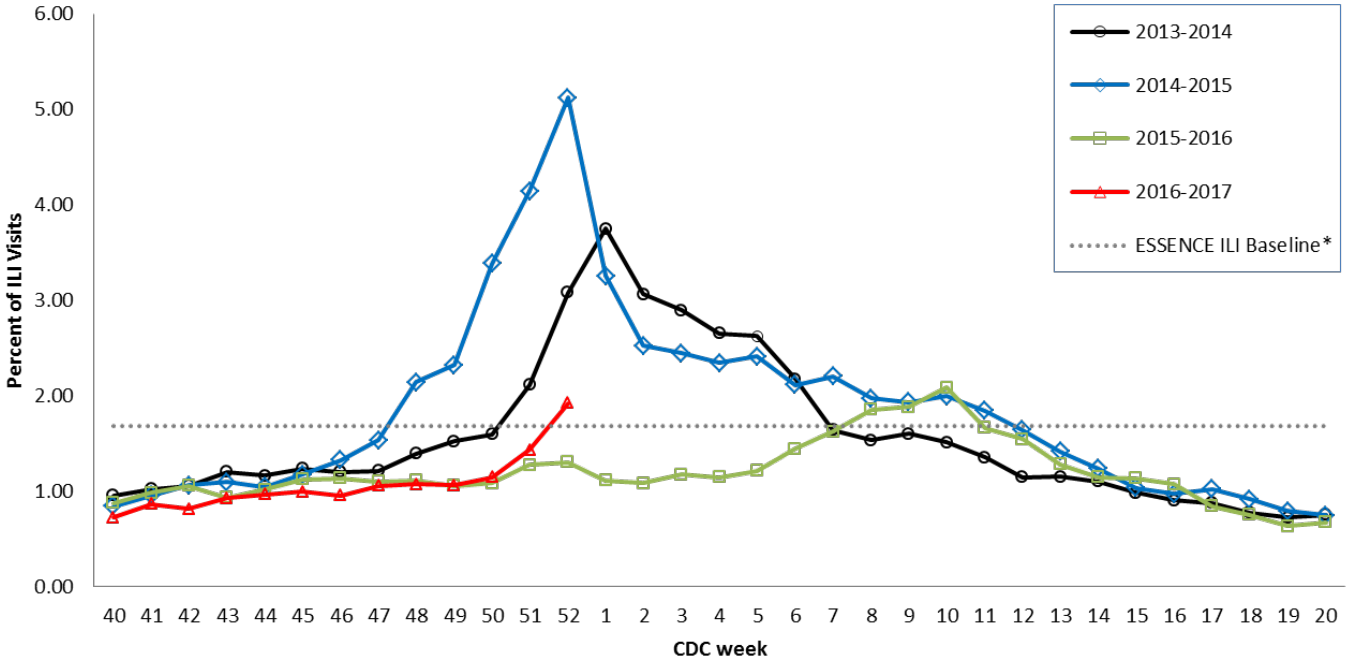
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons

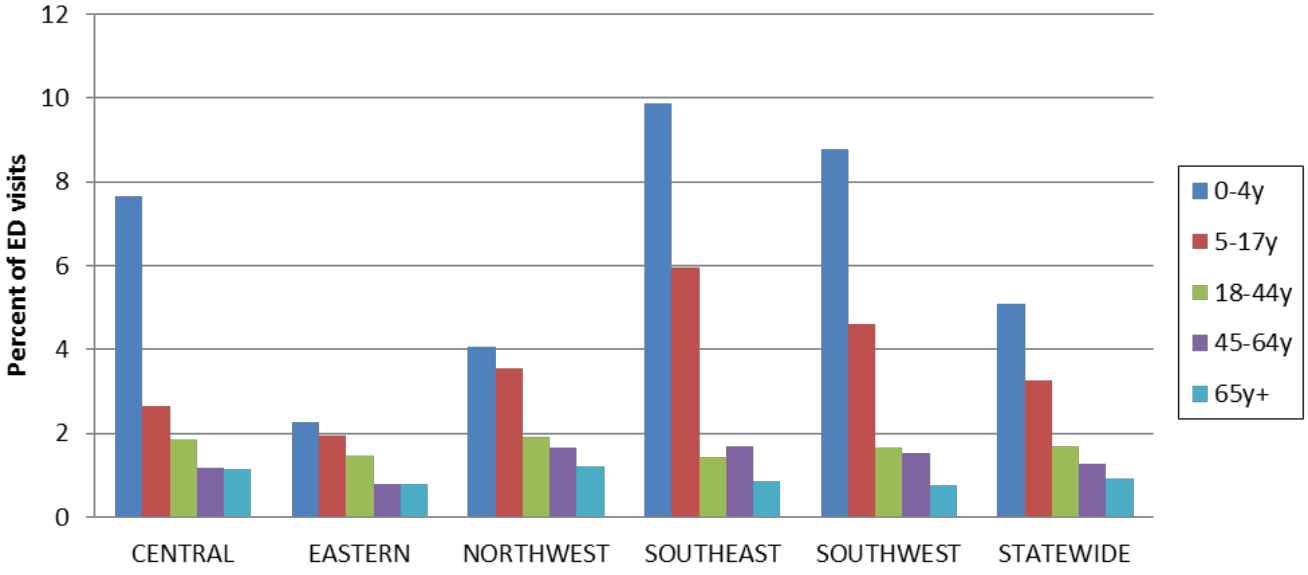


*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.

Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

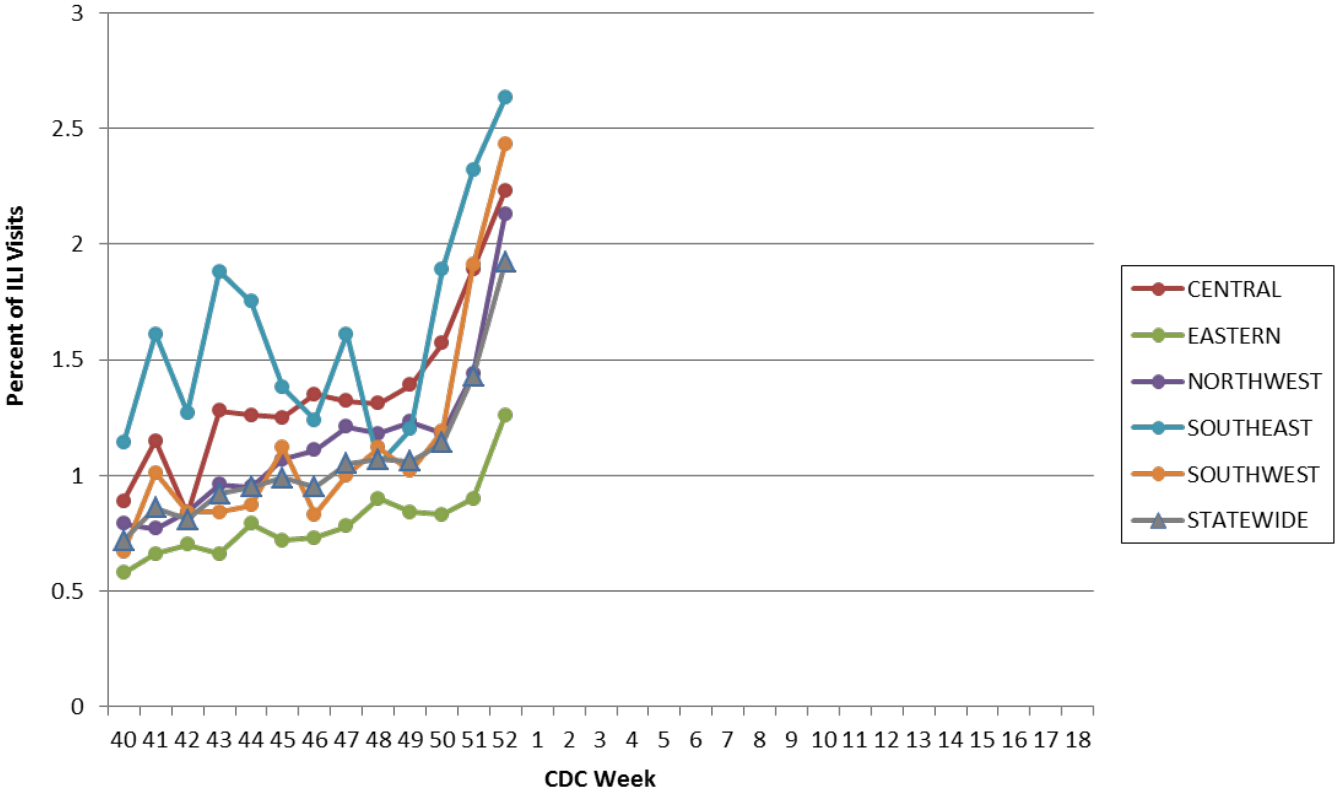
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 52, 2016



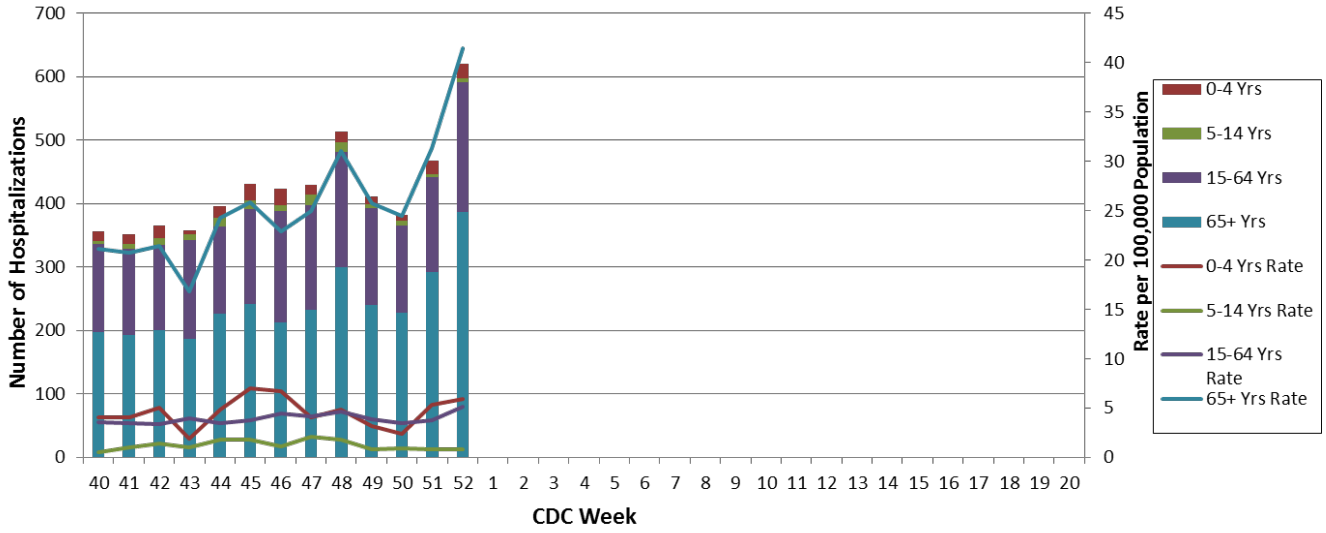
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 52, 2016



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 1: January 1 – January 7, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri increased to Regional[2].

- A season-to-date total of 4,151 laboratory-positive[3] influenza cases (3,415 influenza A, 660 influenza B, and 76 untyped) have been reported in Missouri as of Week 1. The influenza type for reported cases season-to-date includes 82% influenza A, 16% influenza B, and 2% untyped. One thousand three hundred and fifty-six laboratory-positive[3] influenza cases (1,213 influenza A, 131 influenza B, and 12 untyped) were reported during Week 1. Two laboratory-confirmed cases of influenza A (H3) were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 1.

- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 4.65% and 1.94% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories also increased during Week 1.

- One influenza-associated death has been reported in Missouri, to date, this influenza season. During Week 52, 55 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 727 P&I associated deaths in Missouri.[5]

- Five influenza or ILI-associated outbreaks have been reported in Missouri, to date, this influenza season. No influenza or ILI-associated school closures have been reported in Missouri, to date, this influenza season.

- Influenza activity increased in the U.S. during Week 52. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Regional is defined as: Outbreaks of influenza or increases in ILI and recent laboratory-confirmed influenza in at least two but less than half the regions of the state with recent laboratory evidence of influenza in those regions.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2id9IB6. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 1**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 1**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 1 (January 1 – January 7, 2017)

Influenza Type	Week 51	Week 52	Week 1	2016-2017* Season-to-Date
Influenza A	503	1,039	1,213	3,415
Influenza B	63	136	131	660
Influenza Unknown Or Untyped	12	22	12	76
Total	578	1,197	1,356	4,151

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 1 (January 1 – January 7, 2017)

Age Group	Week 1 Cases	Week 1 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	192	51	552	147
05-14	130	17	632	81
15-64	709	18	2,155	54
65+	325	35	811	87
Total	1,356	22	4,151	68

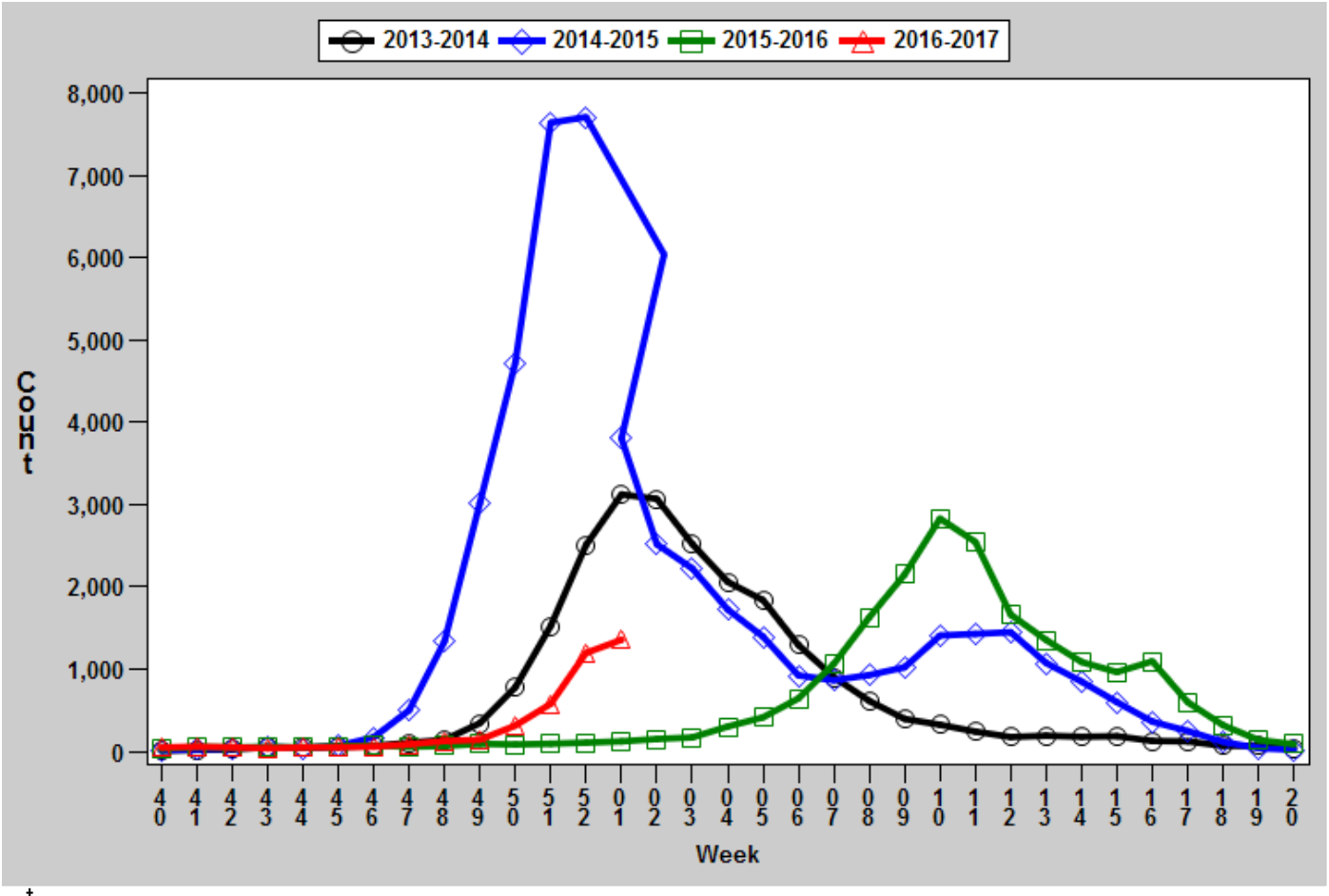
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 1 (January 1 – January 7, 2017)

District	Week 1 Cases	Week 1 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	168	25	609	92
EA	441	20	985	44
NW	376	24	1,094	69
SE	68	14	273	57
SW	303	28	1,190	111
Total	1,356	22	4,151	68

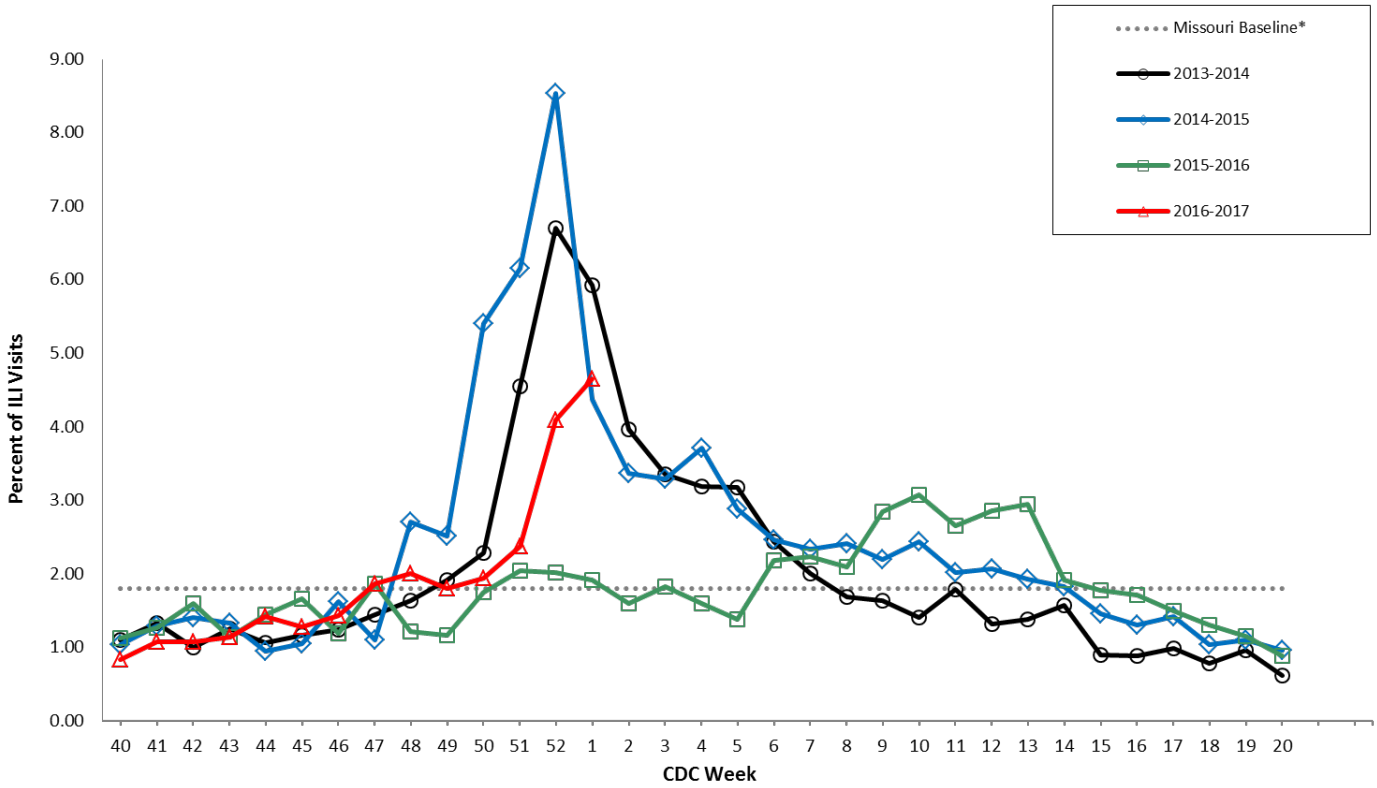
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*



†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

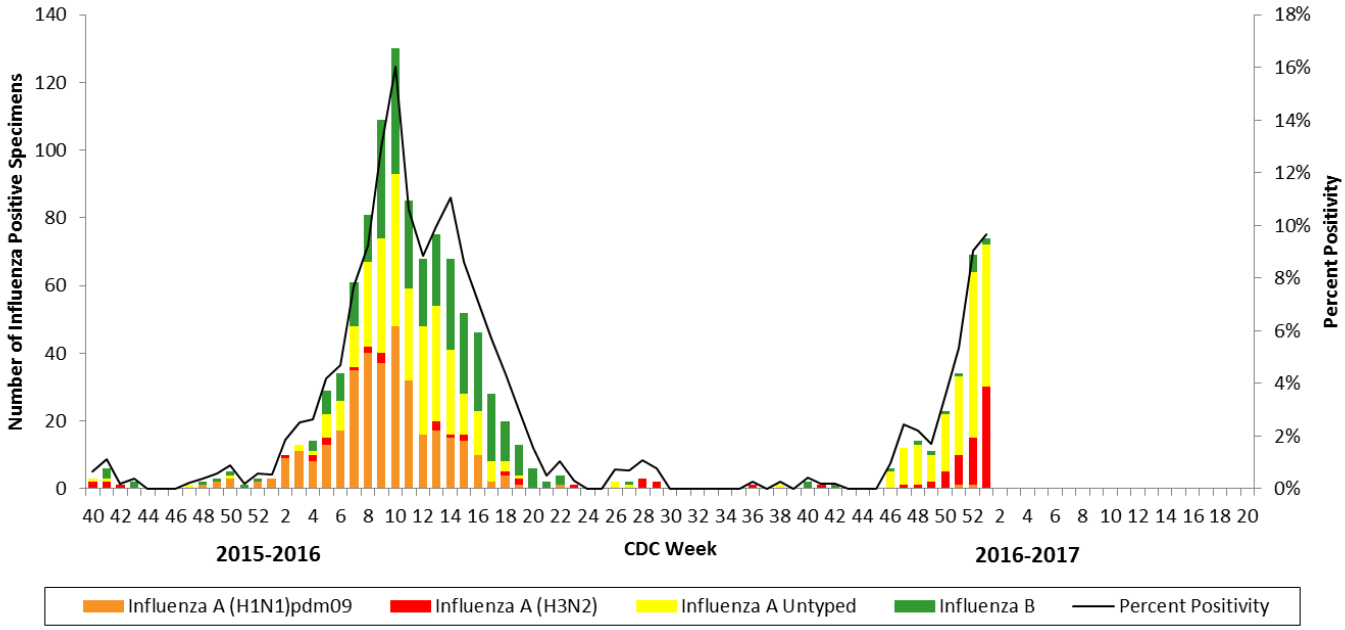
Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).

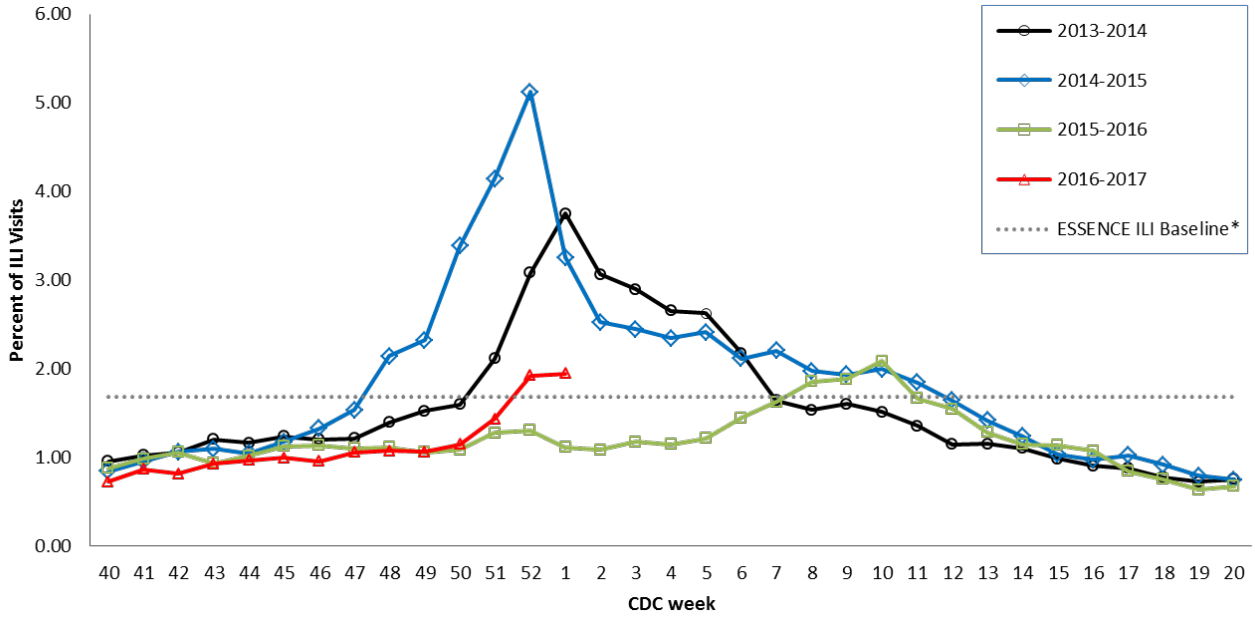
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons

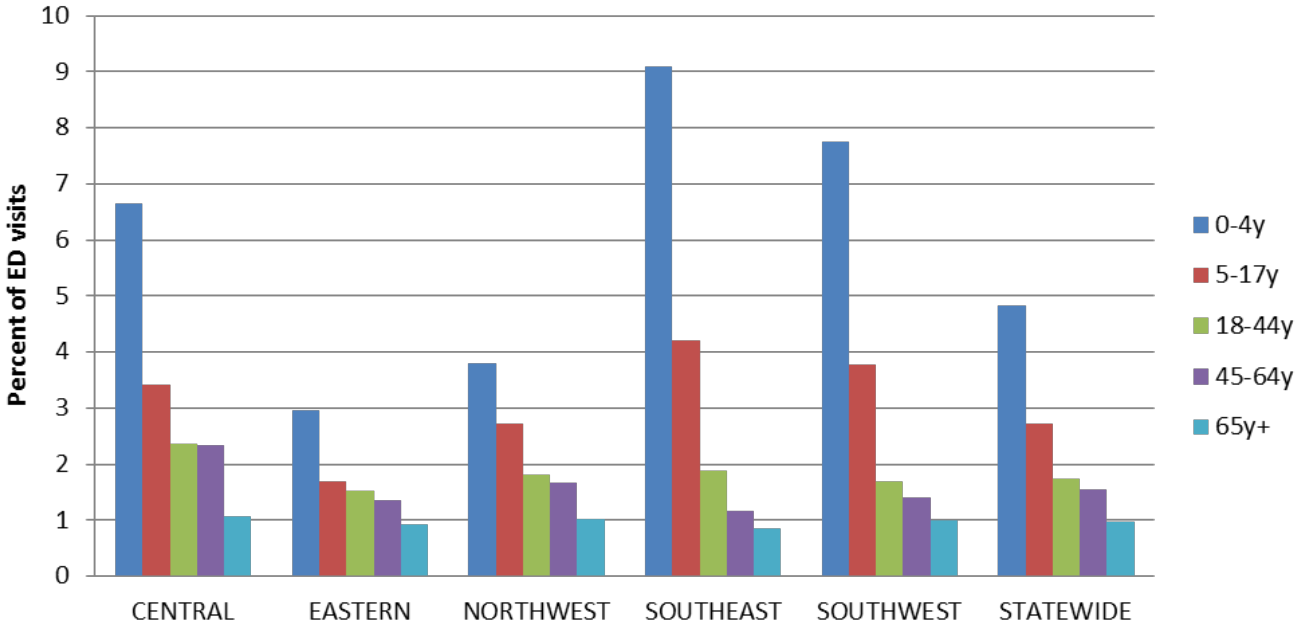


*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.

Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

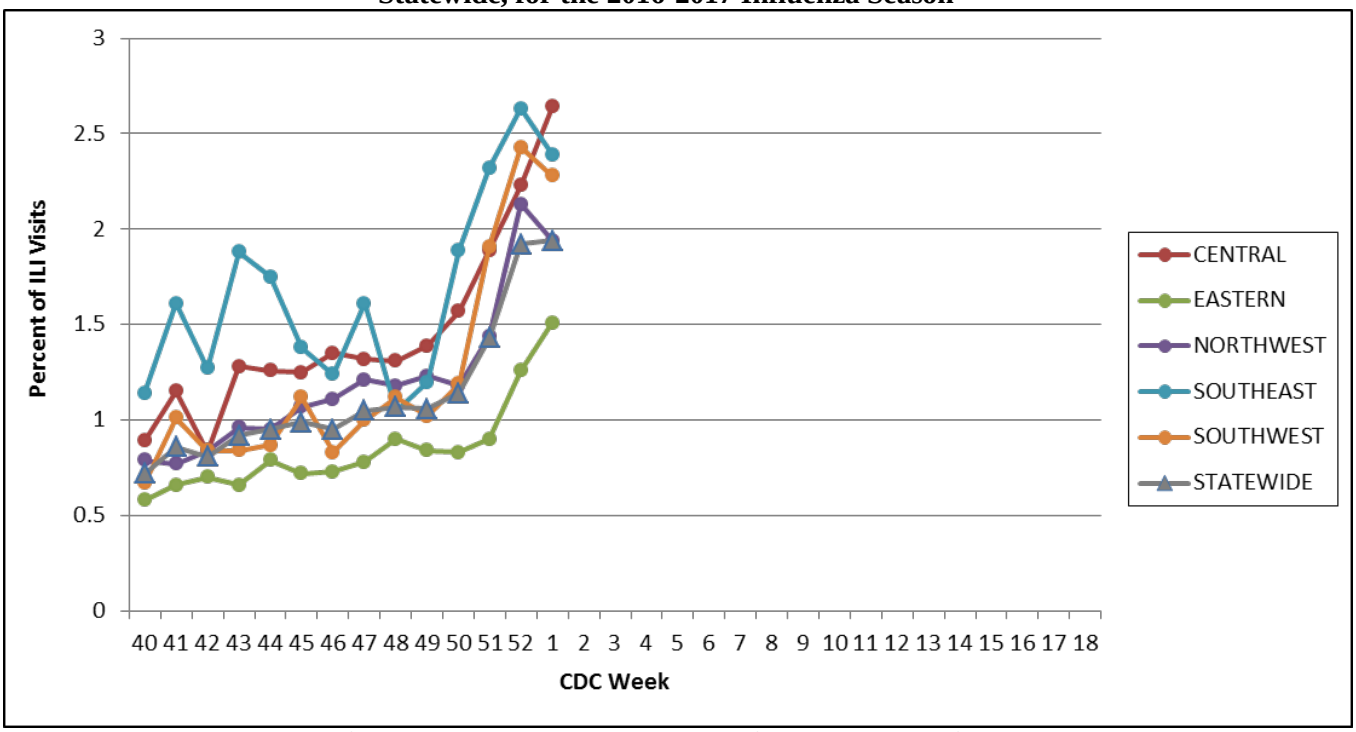
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 1, 2017



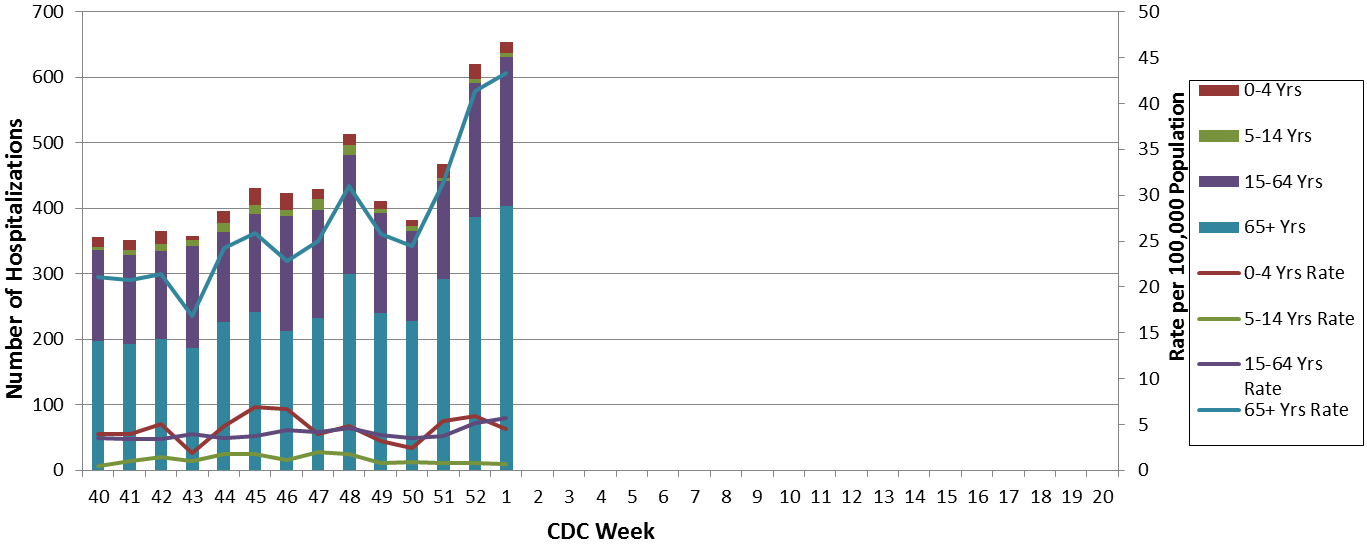
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 1, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 2: January 8 – January 14, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri increased to Widespread[2].

- A season-to-date total of 6,128 laboratory-positive[3] influenza cases (5,165 influenza A, 875 influenza B, and 88 untyped) have been reported in Missouri as of Week 2. The influenza type for reported cases season-to-date includes 84% influenza A, 14% influenza B, and 2% untyped. One thousand five hundred and sixty laboratory-positive[3] influenza cases (1,378 influenza A, 173 influenza B, and 9 untyped) were reported during Week 2. Ten laboratory-confirmed cases of influenza A (H3) were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 2.

- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 6.71% and 2.21% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories also increased during Week 2.

- Two influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 1, 72 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 799 P&I associated deaths in Missouri.[5]

- Ten influenza or ILI-associated outbreaks have been reported in Missouri, to date, this influenza season. One influenza or ILI-associated school closure has been reported in Missouri, to date, this influenza season.

- Influenza activity increased in the U.S. during Week 1. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Widespread is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2j9U8Tr. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 2**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 2**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 2 (January 8 – January 14, 2017)

Influenza Type	Week 52	Week 1	Week 2	2016-2017* Season-to-Date
Influenza A	1,111	1,494	1,378	5,165
Influenza B	140	168	173	875
Influenza Unknown Or Untyped	22	15	9	88
Total	1,273	1,677	1,560	6,128

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 2 (January 8 – January 14, 2017)

Age Group	Week 2 Cases	Week 2 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	177	47	778	208
05-14	257	33	935	120
15-64	831	21	3,208	81
65+	295	32	1,206	129
Total	1,560	26	6,128	101

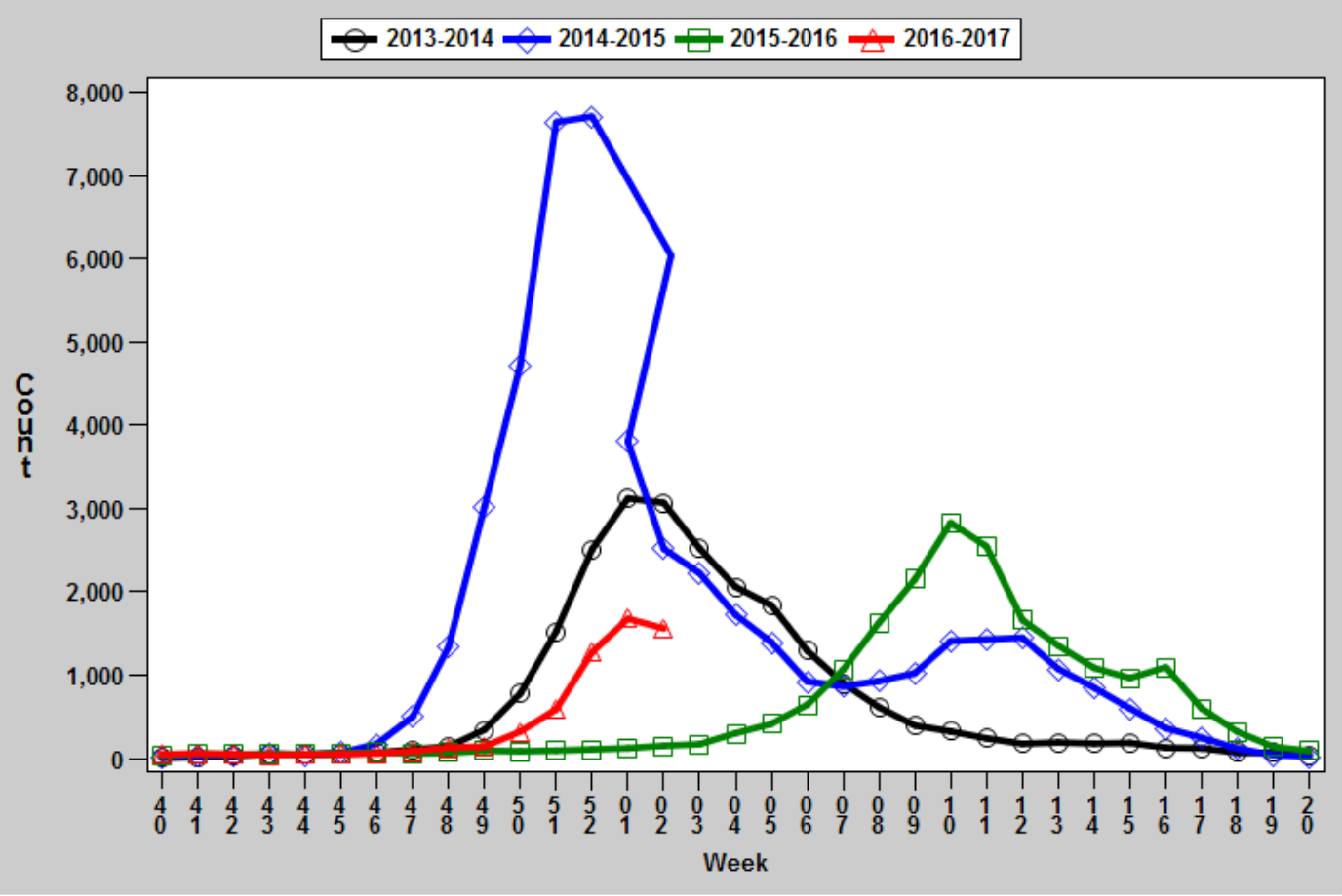
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 2 (January 8 – January 14, 2017)

District	Week 2 Cases	Week 2 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	181	27	861	130
EA	383	17	1,370	61
NW	561	35	1,837	115
SE	73	15	350	74
SW	362	34	1,710	159
Total	1,560	26	6,128	101

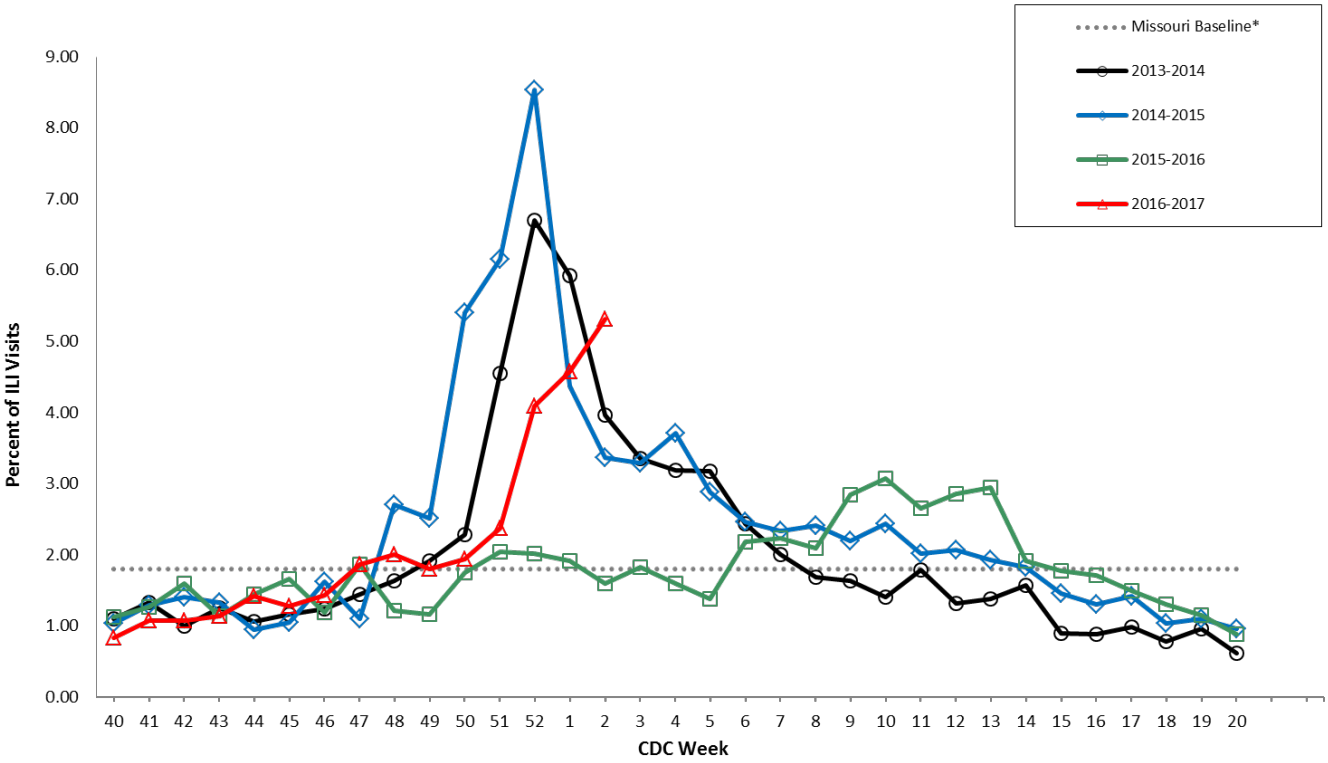
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*



†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

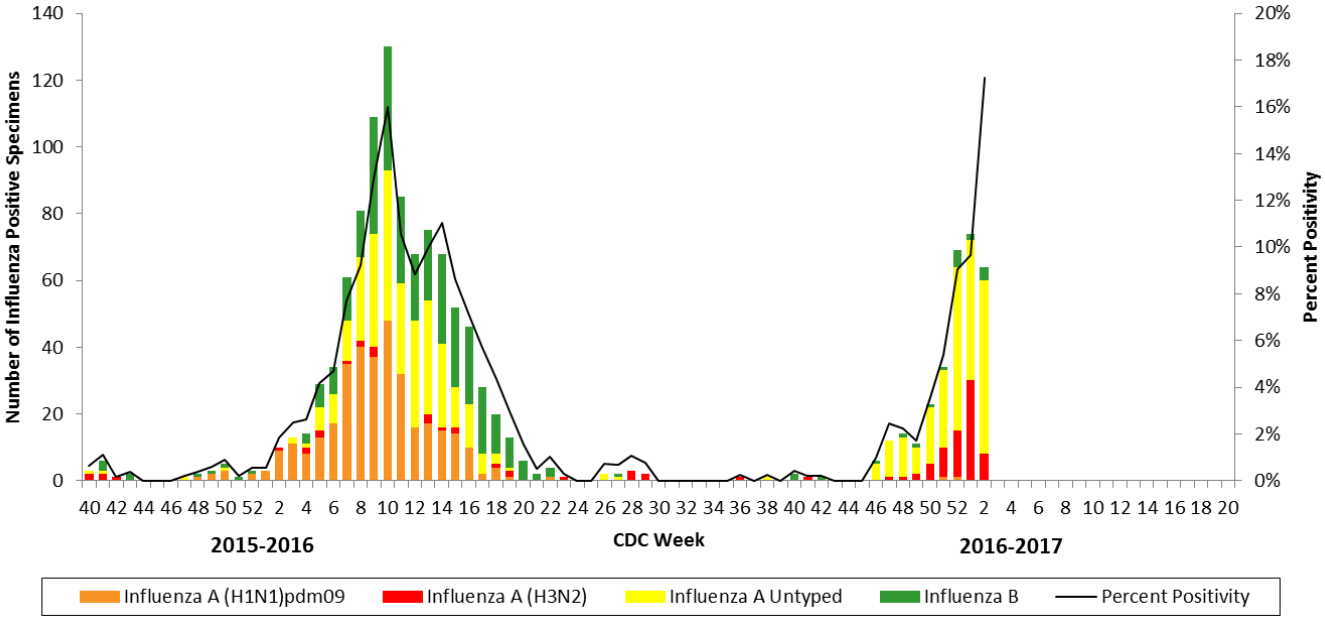
Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).

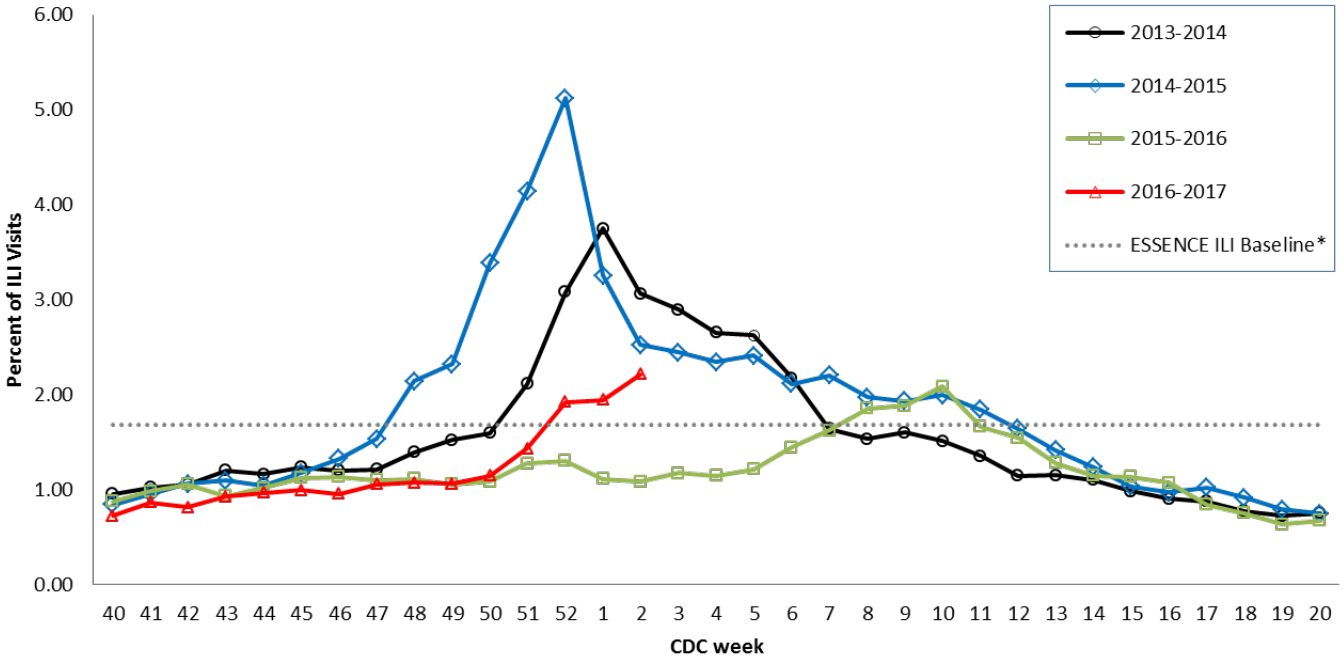
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



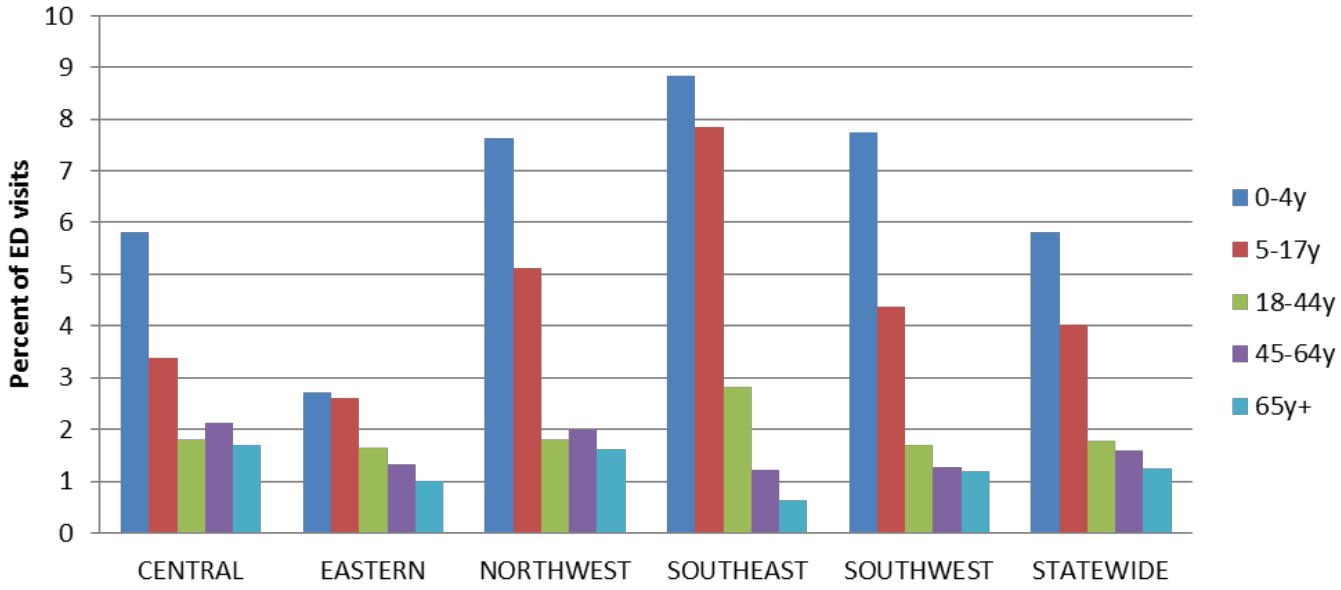
Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons



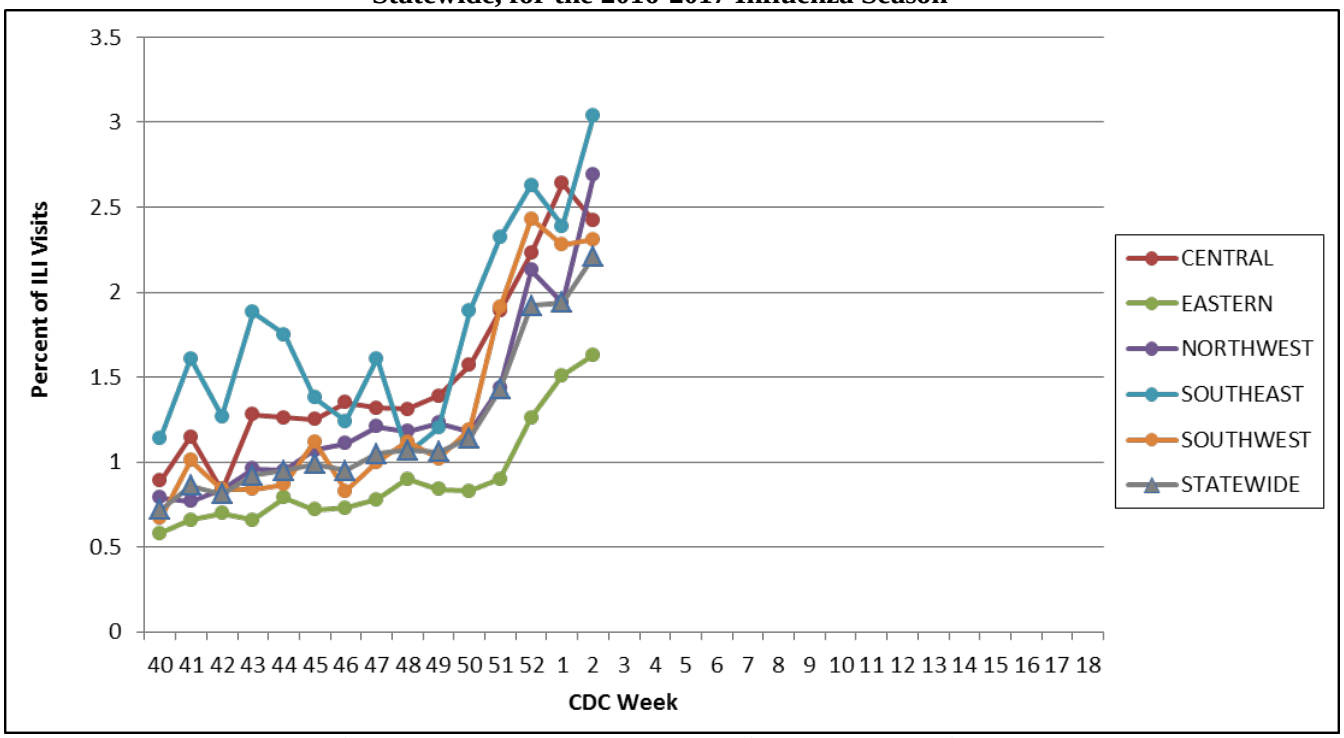
*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 2, 2017



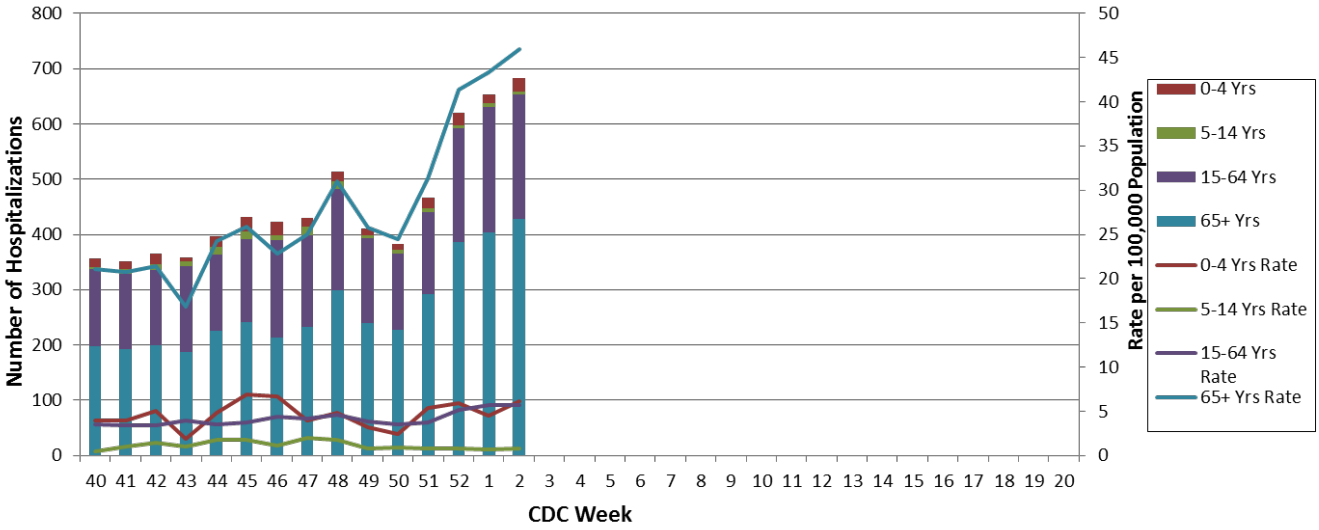
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 2, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 3: January 15 – January 21, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Widespread[2].

- A season-to-date total of 9,338 laboratory-positive[3] influenza cases (7,892 influenza A, 1,288 influenza B, and 158 untyped) have been reported in Missouri as of Week 3. The influenza type for reported cases season-to-date includes 84% influenza A, 14% influenza B, and 2% untyped. Two thousand six hundred and twenty laboratory-positive[3] influenza cases (2,228 influenza A, 338 influenza B, and 54 untyped) were reported during Week 3. Twelve laboratory-confirmed cases of influenza [10 influenza A (H3), one influenza A (H1N1), and one influenza B (Victoria)] were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 3.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized one influenza isolate from Missouri, to date, this influenza season. The virus was antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus included in the 2016-2017 Northern Hemisphere vaccine formulation.

- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 3.71% and 2.78% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories also increased during Week 3.

- Two influenza-associated deaths have been reported in Missouri, to date, this influenza season. During Week 2, 68 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 867 P&I associated deaths in Missouri.[5]

- Thirteen influenza or ILI-associated outbreaks have been reported in Missouri, to date, this influenza season. Two influenza or ILI-associated school closures have been reported in Missouri, to date, this influenza season.

- Influenza activity increased in the U.S. during Week 2. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Widespread is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2j4QgXD. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 3**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 3**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 3 (January 15 – January 21, 2017)

Influenza Type	Week 1	Week 2	Week 3	2016-2017* Season-to-Date
Influenza A	1,577	1,770	2,228	7,892
Influenza B	184	227	338	1,288
Influenza Unknown Or Untyped	16	25	54	158
Total	1,777	2,022	2,620	9,338

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 3 (January 15 – January 21, 2017)

Age Group	Week 3 Cases	Week 3 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	373	100	1,226	328
05-14	563	72	1,628	208
15-64	1,254	32	4,757	120
65+	430	46	1,726	185
Total	2,620	43	9,338	154

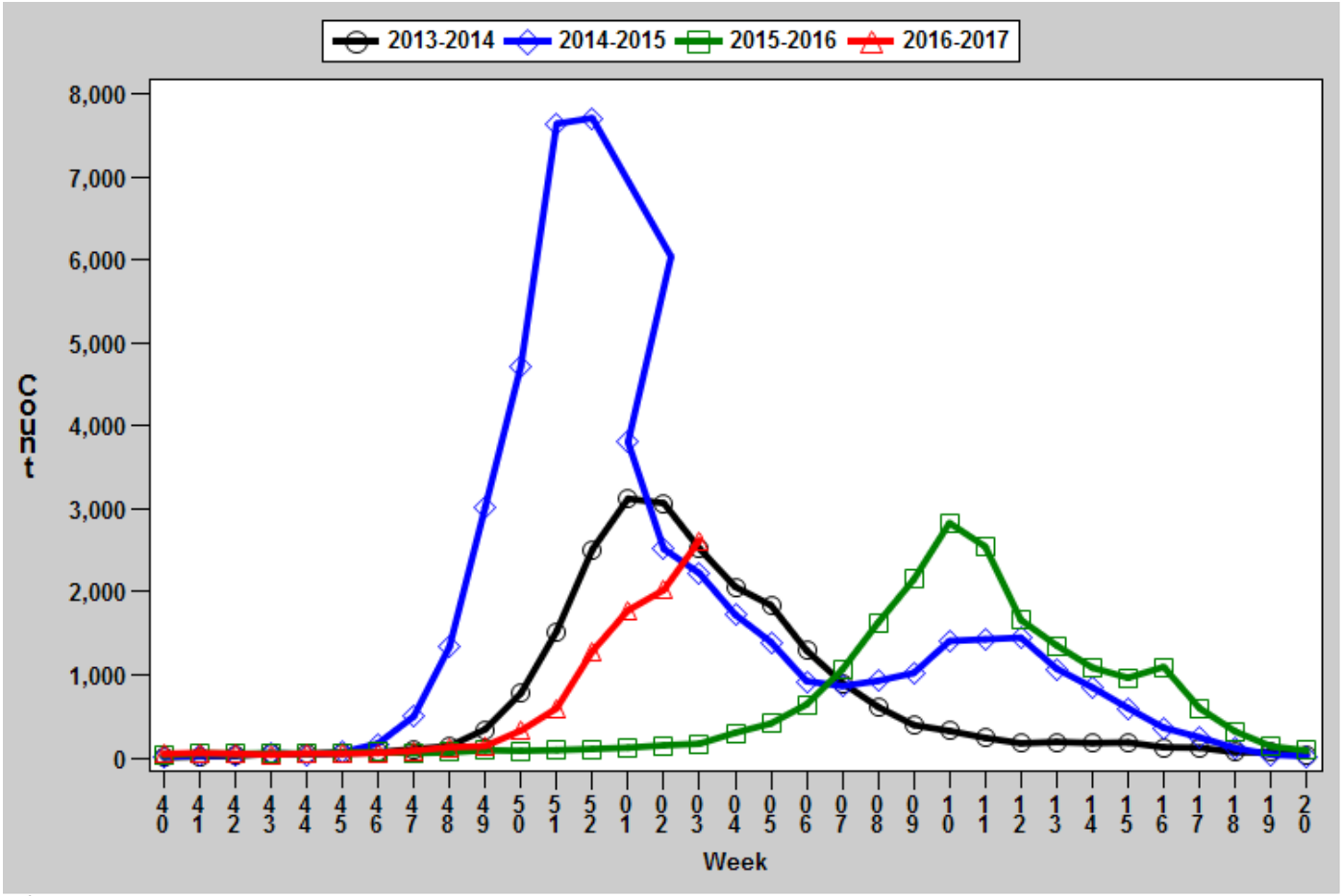
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 3 (January 15 – January 21, 2017)

District	Week 3 Cases	Week 3 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	269	41	1,185	179
EA	693	31	2,139	95
NW	1,038	65	3,096	195
SE	202	42	637	134
SW	418	39	2,281	212
Total	2,620	43	9,338	154

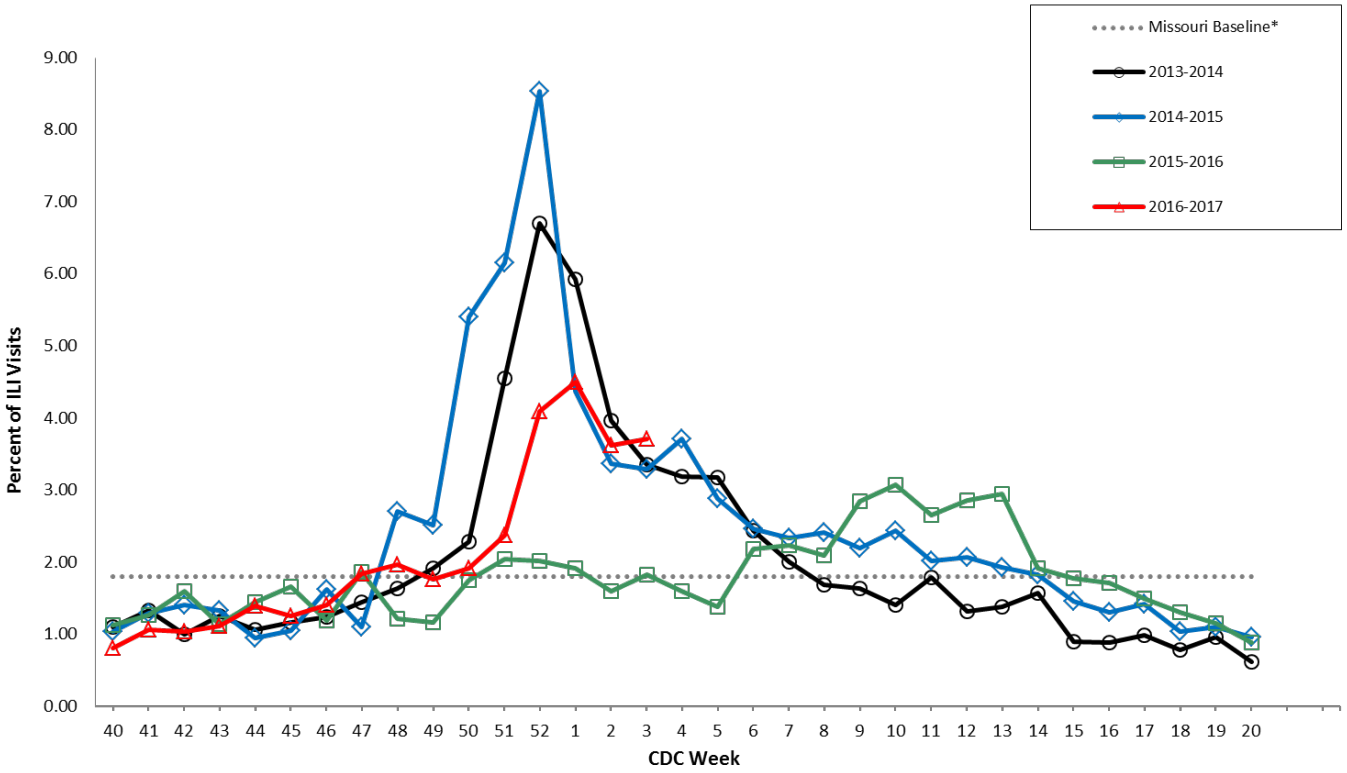
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017*



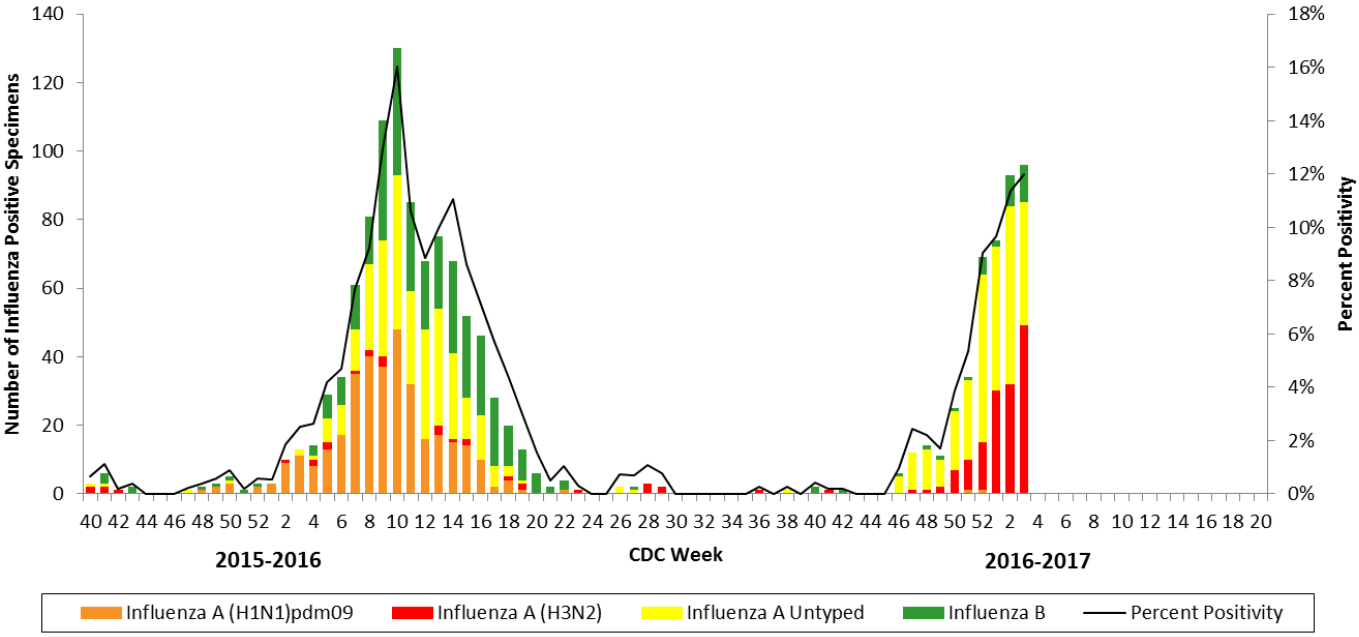
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017†



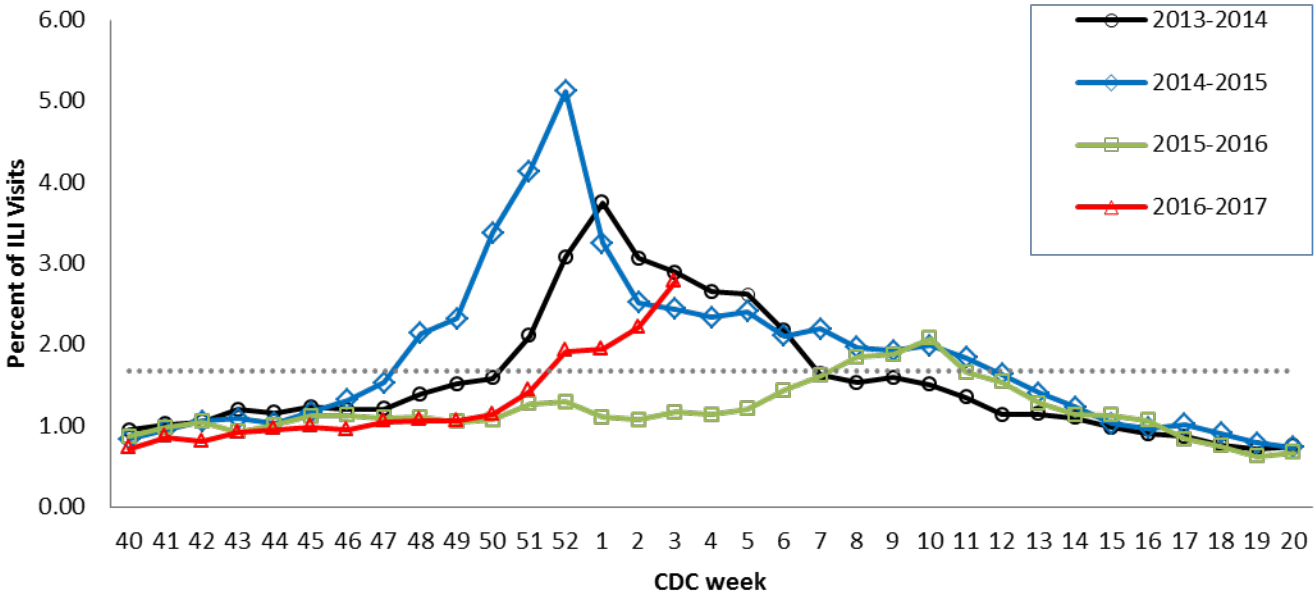
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



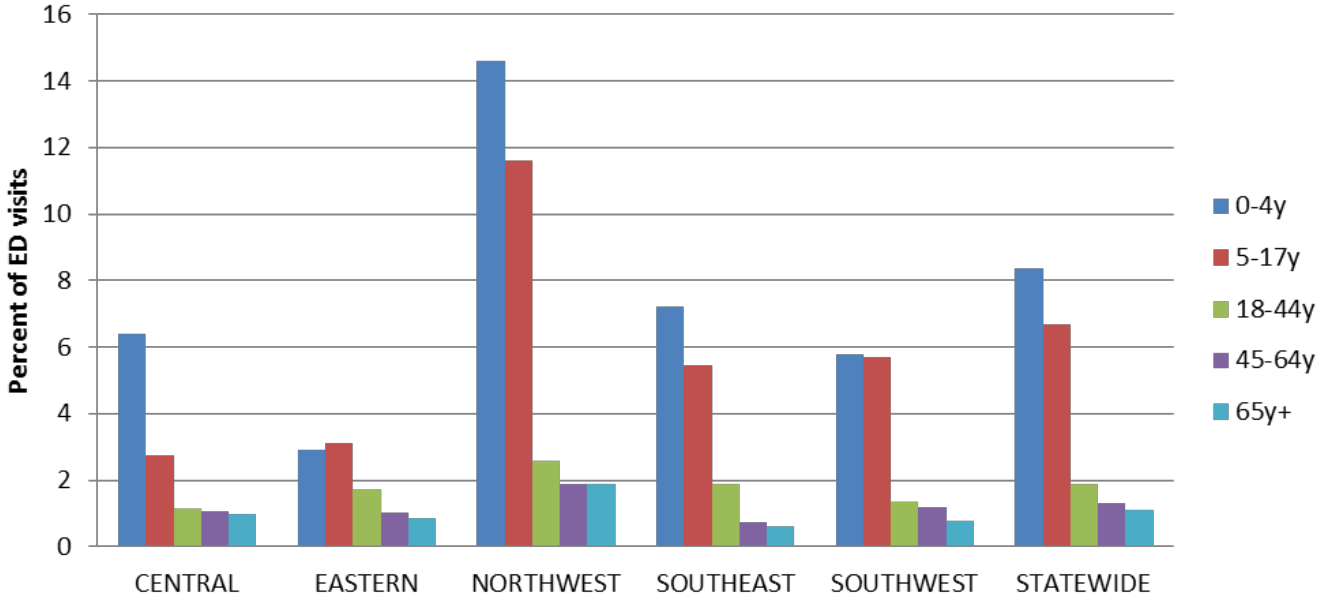
Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons



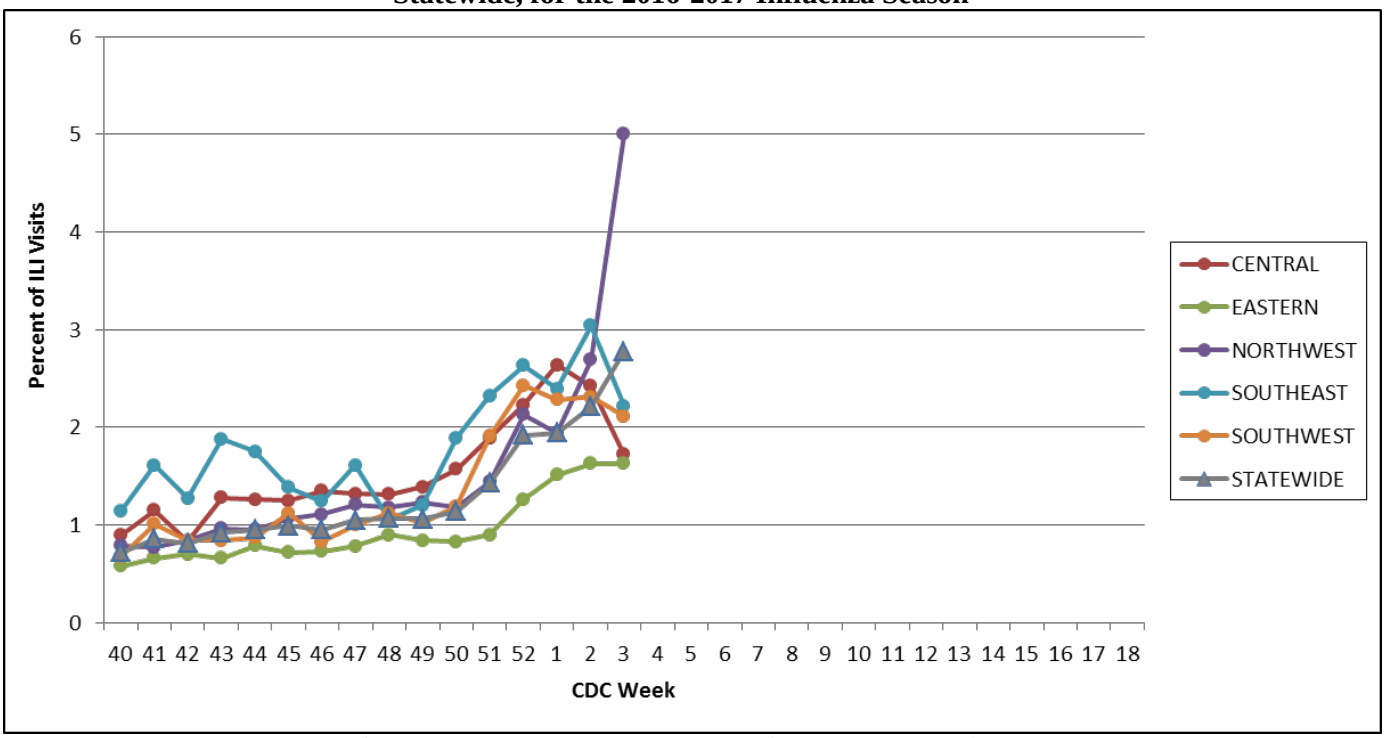
*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 3, 2017



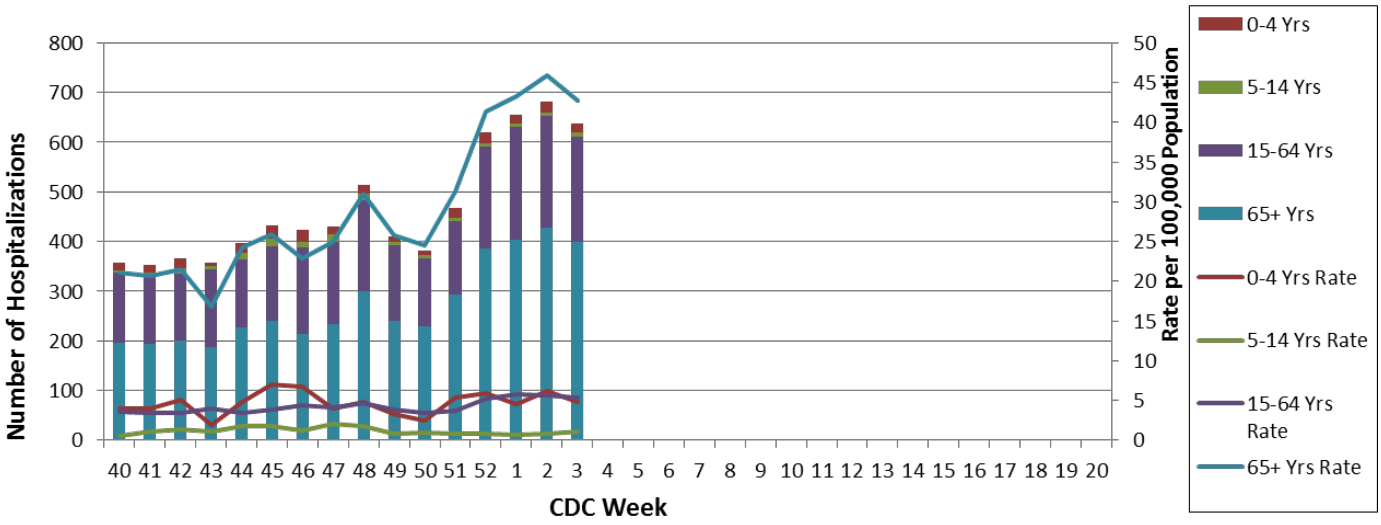
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Some of the ILI increase in the Northwest District may be due to surveillance changes implemented on January 16, 2017.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Some of the ILI increase in the Northwest District may be due to surveillance changes implemented on January 16, 2017.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 3, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 4: January 22 – January 28, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Widespread[2].

- A season-to-date total of 15,378 laboratory-positive[3] influenza cases (12,970 influenza A, 2,085 influenza B, and 323 untyped) have been reported in Missouri as of Week 4. The influenza type for reported cases season-to-date includes 84% influenza A, 14% influenza B, and 2% untyped. The highest season-to-date rate of reported laboratory-positive influenza cases is among children aged 0-4 years (534 cases per 100,000 population). Twenty-three laboratory-confirmed cases of influenza [21 influenza A (H3) and two influenza B (Yamagata)] were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 4.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized one influenza isolate from Missouri, to date, this influenza season. The virus was antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus included in the 2016-2017 Northern Hemisphere vaccine formulation.

- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 4.93% and 3.28% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories also increased during Week 4.

- Four influenza-associated deaths have been reported in Missouri as of Week 4. During Week 3, 98 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 965 P&I associated deaths in Missouri.[5]

- Nineteen influenza or ILI-associated outbreaks have been reported in Missouri as of Week 4. Three influenza or ILI-associated school closures have been reported in Missouri as of Week 4.

- Influenza activity increased in the U.S. during Week 3. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Widespread is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2kpWcrP. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 4**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 4**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 4 (January 22 – January 28, 2017)*

Influenza Type	Week 2	Week 3	Week 4	2016-2017* Season-to-Date
Influenza A	2,137	3,068	3,528	12,970
Influenza B	275	478	570	2,085
Influenza Unknown Or Untyped	46	93	95	323
Total	2,458	3,639	4,193	15,378

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 4 (January 22 – January 28, 2017)*‡

Age Group	Week 4 Cases	Week 4 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	549	147	1,997	534
05-14	1,051	135	3,032	388
15-64	2,028	51	7,770	195
65+	564	61	2,577	276
Total	4,193	69	15,378	254

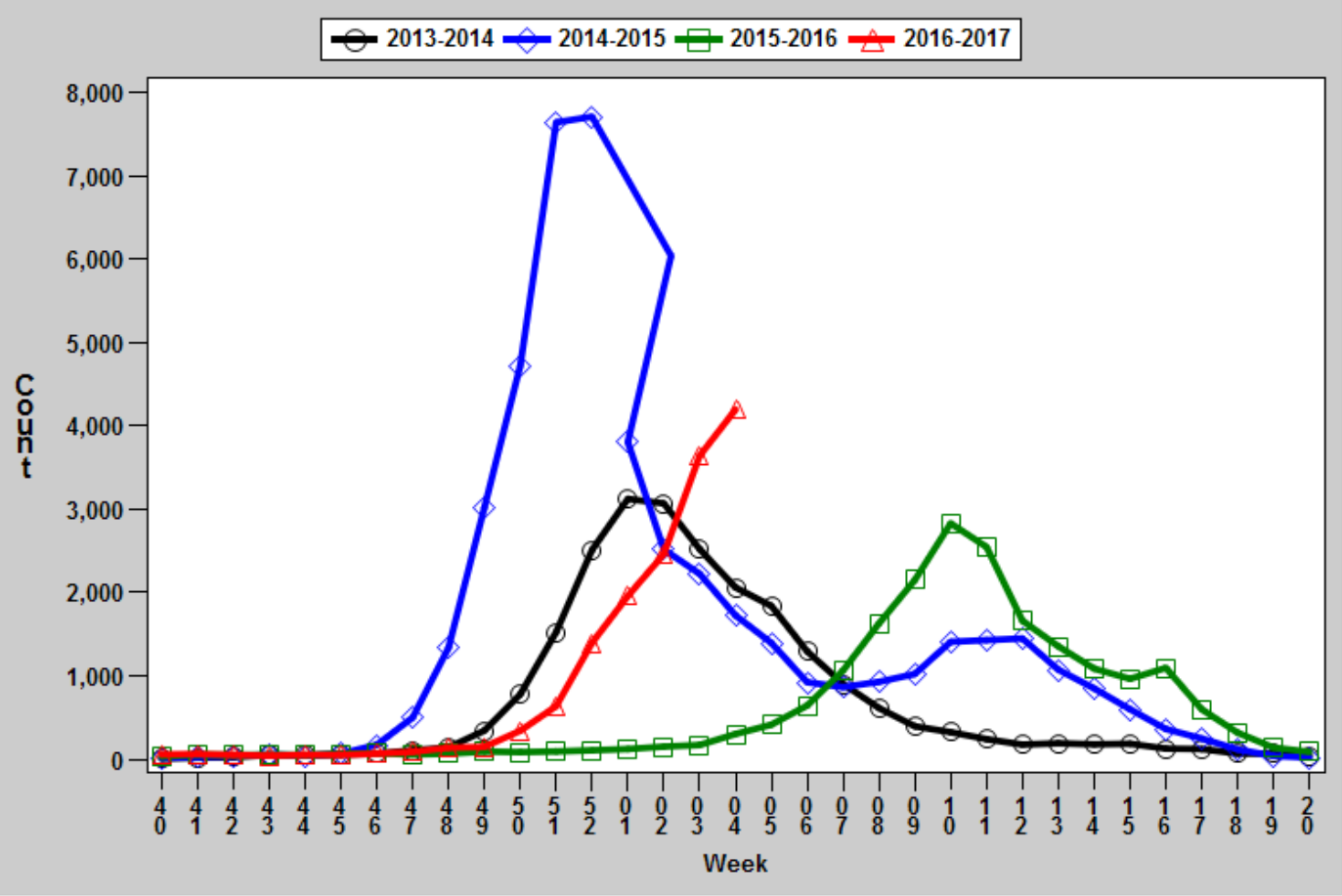
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 4 (January 22 – January 28, 2017)[*‡]

District	Week 4 Cases	Week 4 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	520	79	1,767	267
EA	930	41	3,962	175
NW	1,877	118	5,581	351
SE	332	70	1,062	223
SW	534	50	3,006	279
Total	4,193	69	15,378	254

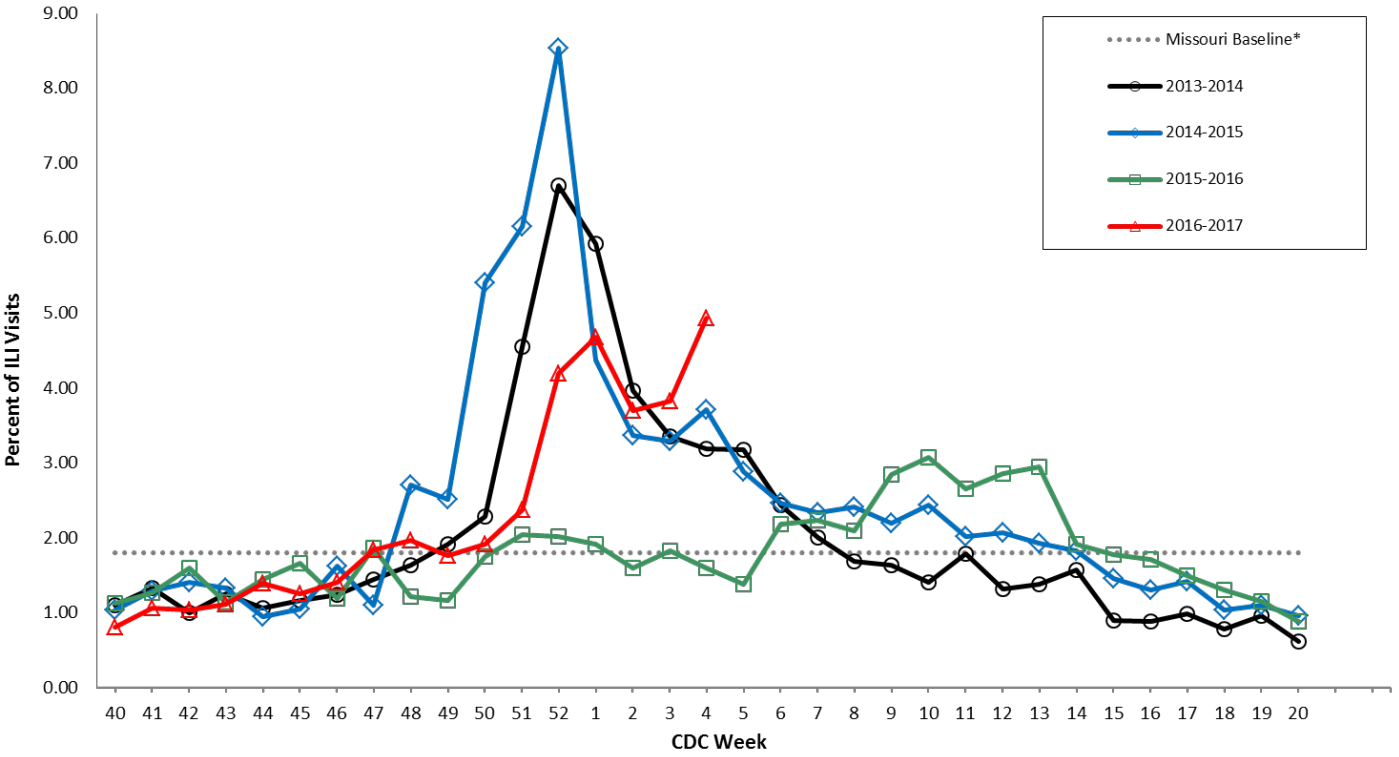
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017[*]



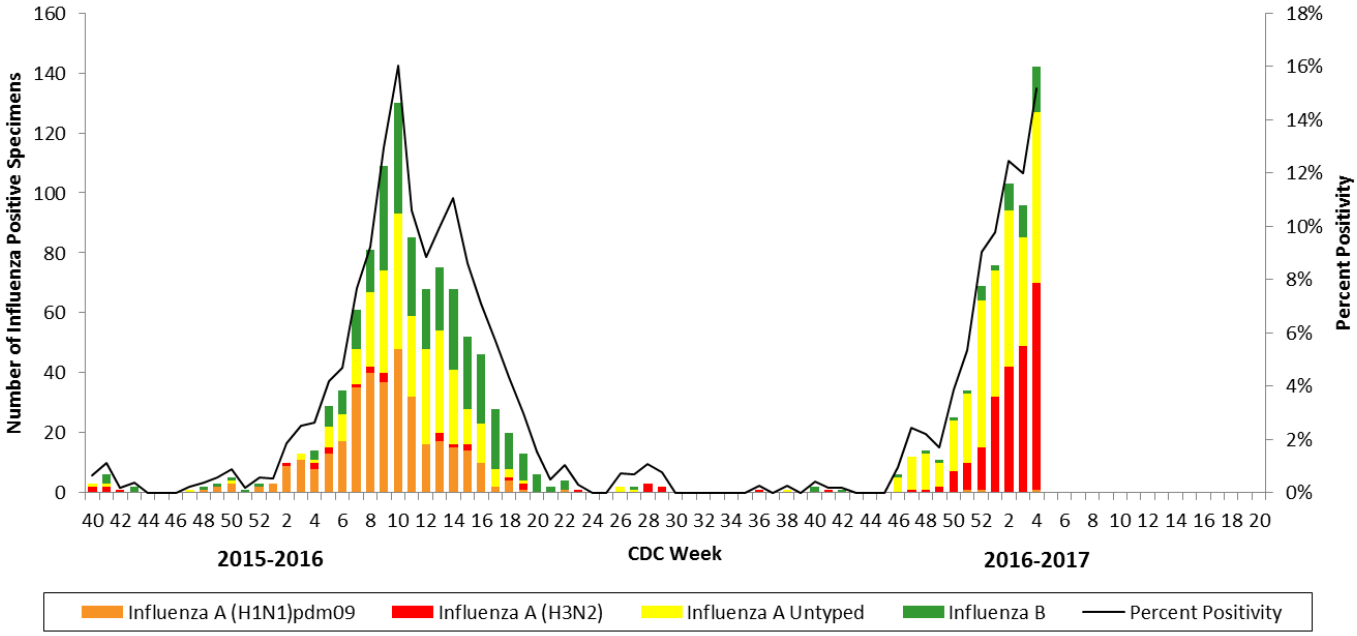
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



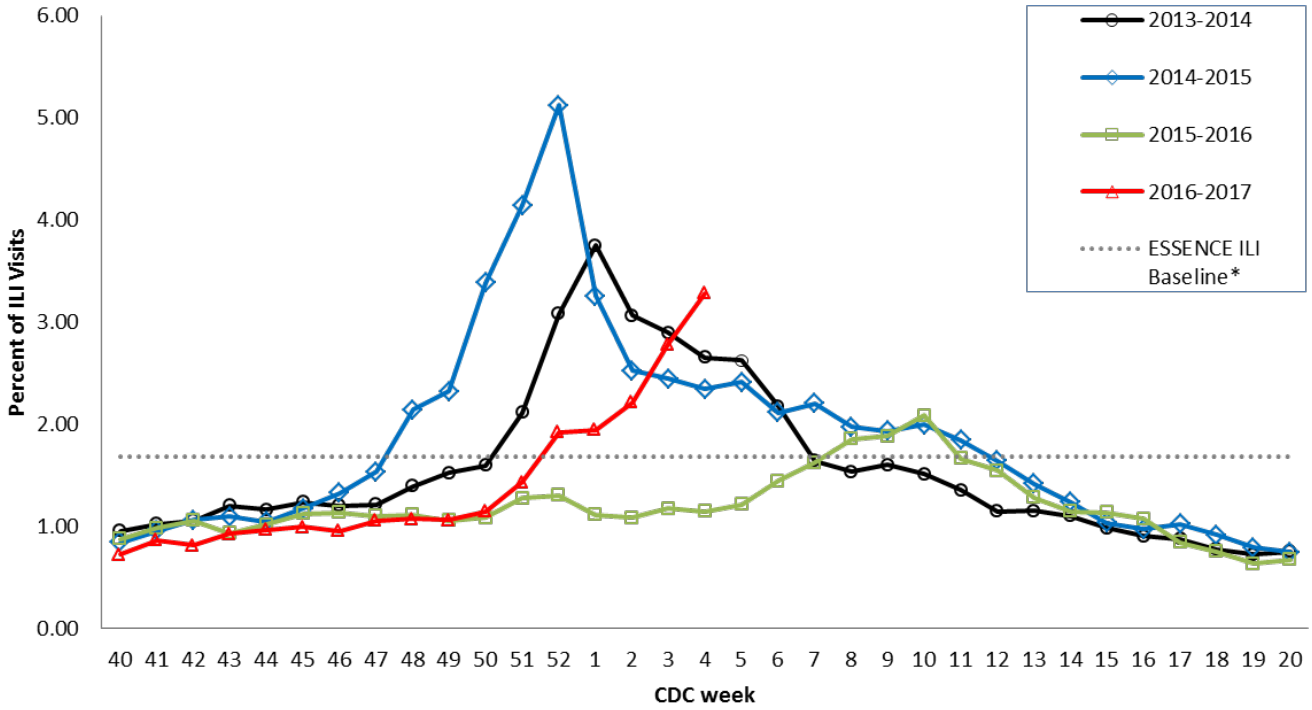
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

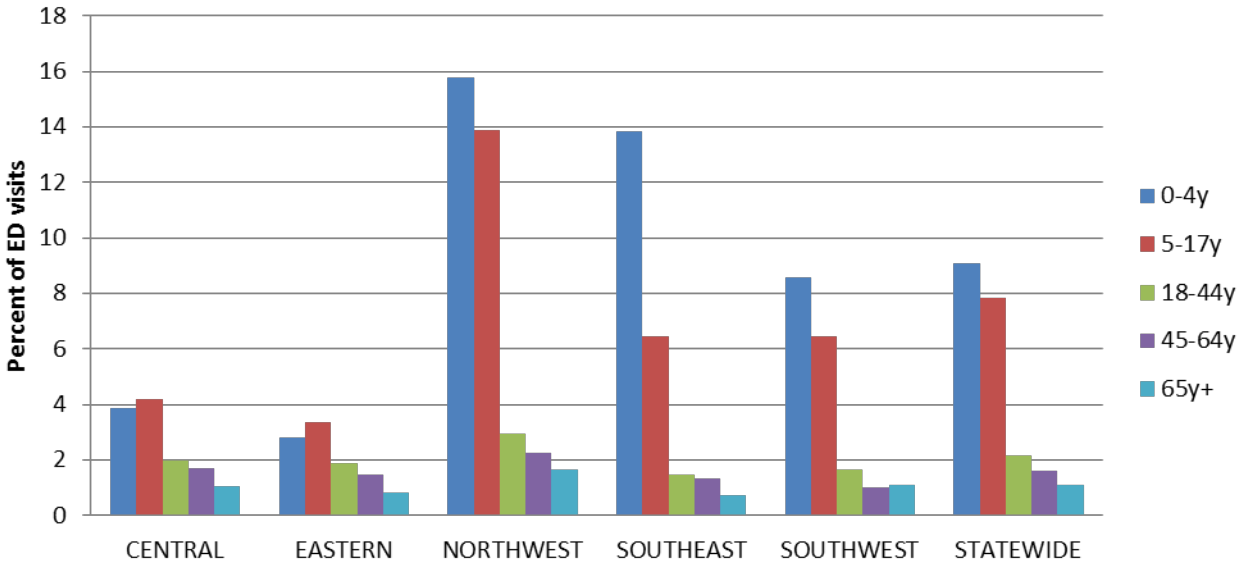
Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†



*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

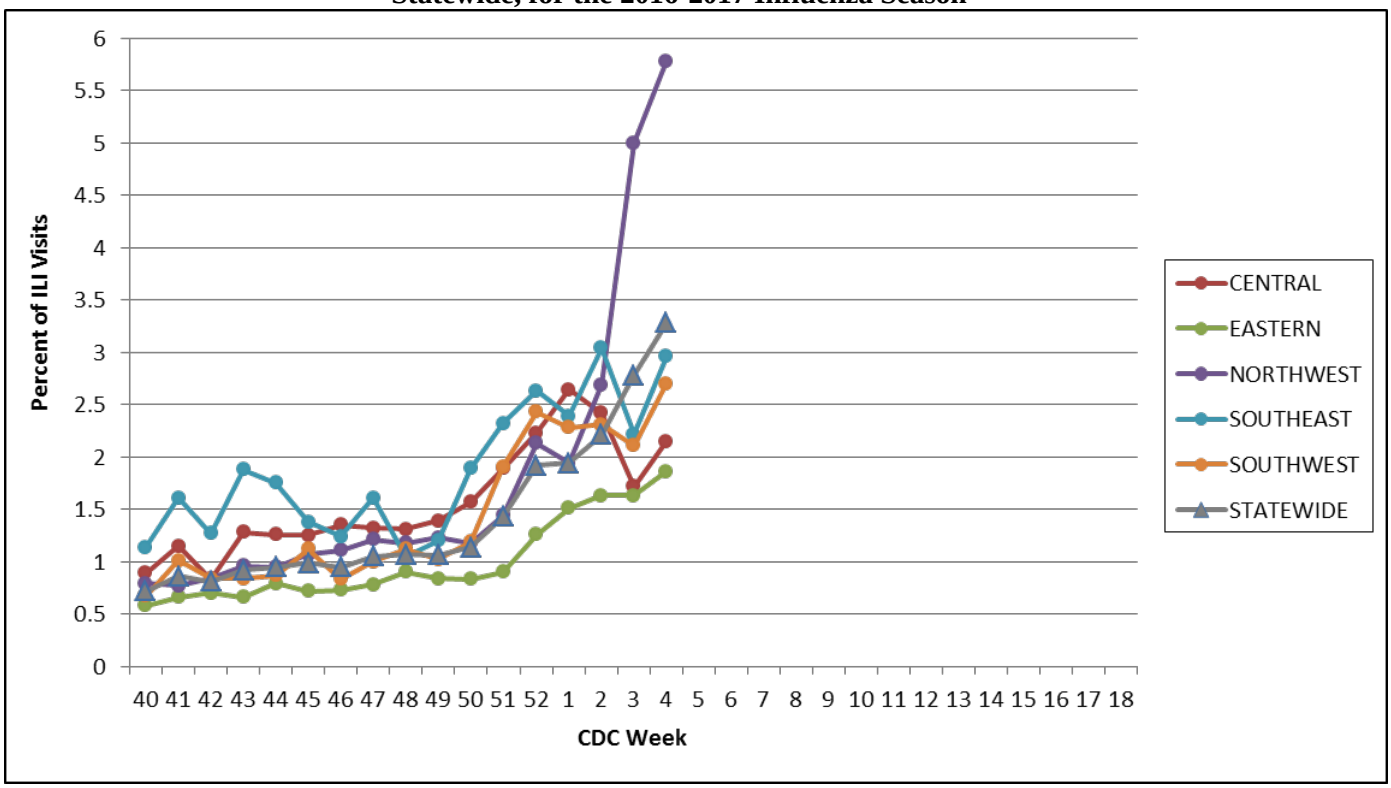
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 4, 2017*



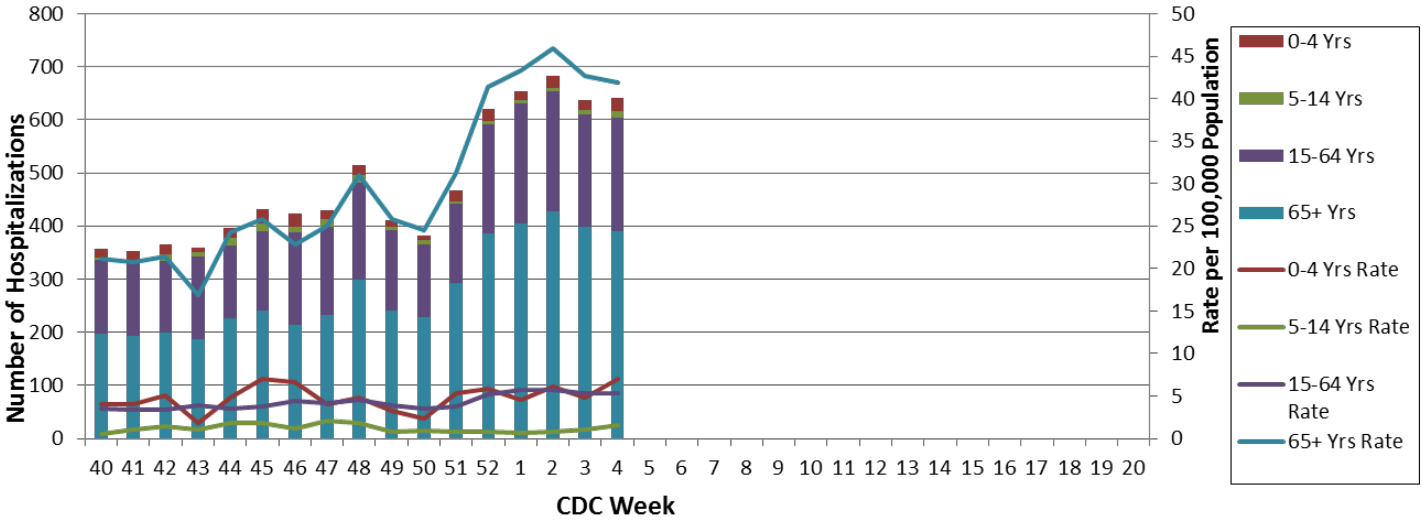
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Some of the ILI increase in the Northwest District may be due to surveillance changes implemented on January 16, 2017.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Some of the ILI increase in the Northwest District may be due to surveillance changes implemented on January 16, 2017.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 4, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView)
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 5: January 29 – February 4, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Widespread[2].
- A season-to-date total of 20,400 laboratory-positive[3] influenza cases (17,070 influenza A, 2,933 influenza B, and 397 untyped) have been reported in Missouri as of Week 5. The influenza type for reported cases season-to-date includes 84% influenza A, 14% influenza B, and 2% untyped. The highest season-to-date rate of reported laboratory-positive influenza cases is among children aged 0-4 years (701 cases per 100,000 population). Sixteen laboratory-confirmed cases of influenza A (H3) were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 5.
- The Centers for Disease Control and Prevention (CDC) has antigenically characterized two influenza isolates from Missouri, to date, this influenza season. Both viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus included in the 2016-2017 Northern Hemisphere vaccine formulation.
- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 7.20% and 4.04% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories also increased during Week 5.
- Seven influenza-associated deaths have been reported in Missouri as of Week 5. During Week 4, 87 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 1,052 P&I associated deaths in Missouri.[5]
- Twenty-four influenza or ILI-associated outbreaks have been reported in Missouri as of Week 5. Four influenza or ILI-associated school closures have been reported in Missouri as of Week 5.
- Influenza activity increased in the U.S. during Week 4. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Widespread is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2kmC4WC. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 5**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 5**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 5 (January 29 – February 4, 2017)*

Influenza Type	Week 3	Week 4	Week 5	2016-2017* Season-to-Date
Influenza A	3,177	3,870	3,591	17,070
Influenza B	509	661	721	2,933
Influenza Unknown Or Untyped	95	102	64	397
Total	3,781	4,633	4,376	20,400

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 5 (January 29 – February 4, 2017)*‡

Age Group	Week 5 Cases	Week 5 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	551	147	2,624	701
05-14	1,283	164	4,448	569
15-64	2,025	51	10,154	255
65+	517	55	3,172	340
Total	4,376	72	20,400	336

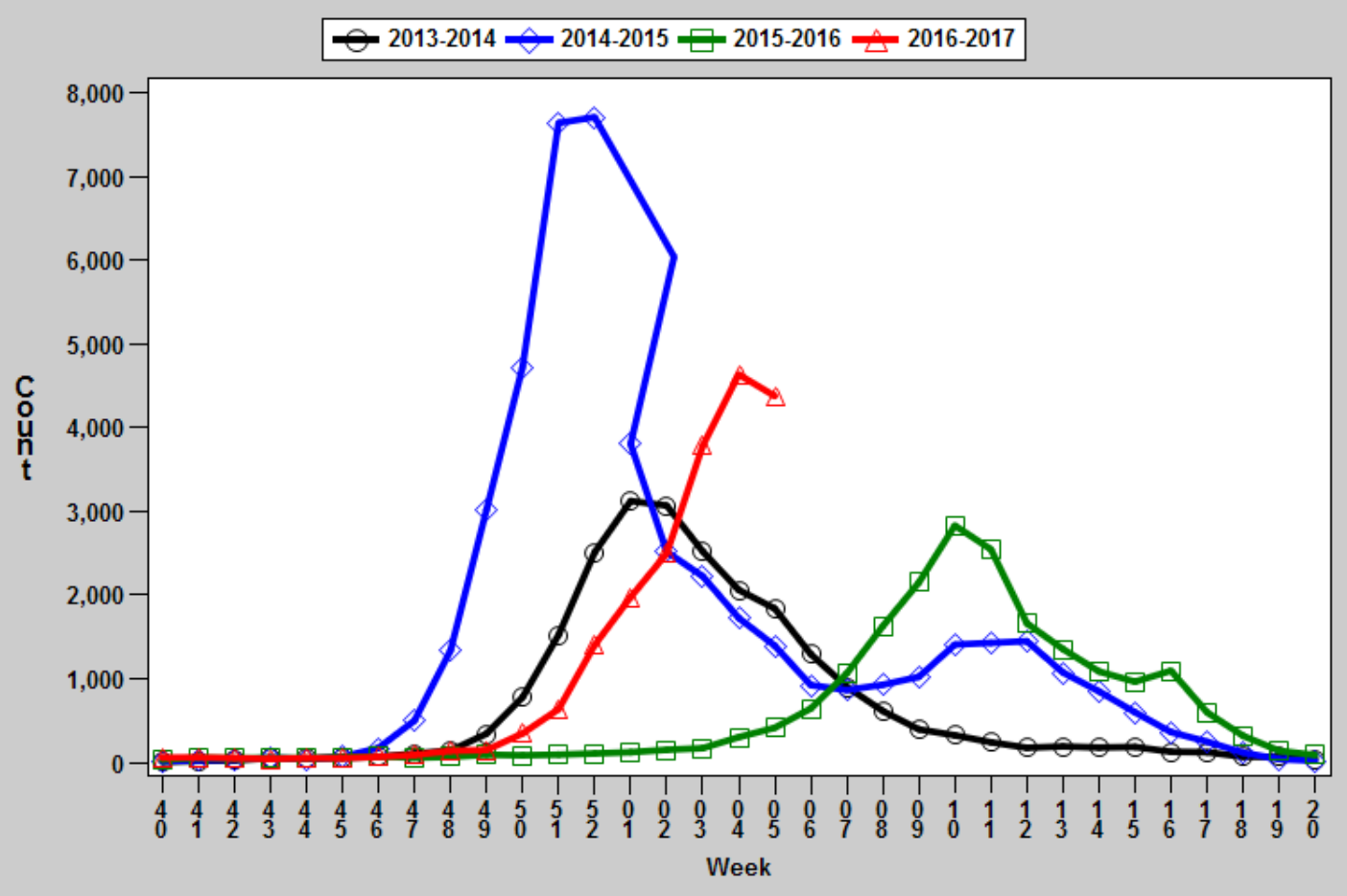
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 5 (January 29 – February 4, 2017)[*‡]

District	Week 5 Cases	Week 5 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	709	107	2,525	381
EA	1,130	50	5,478	243
NW	1,760	111	7,435	467
SE	320	67	1,415	297
SW	457	42	3,547	330
Total	4,376	72	20,400	336

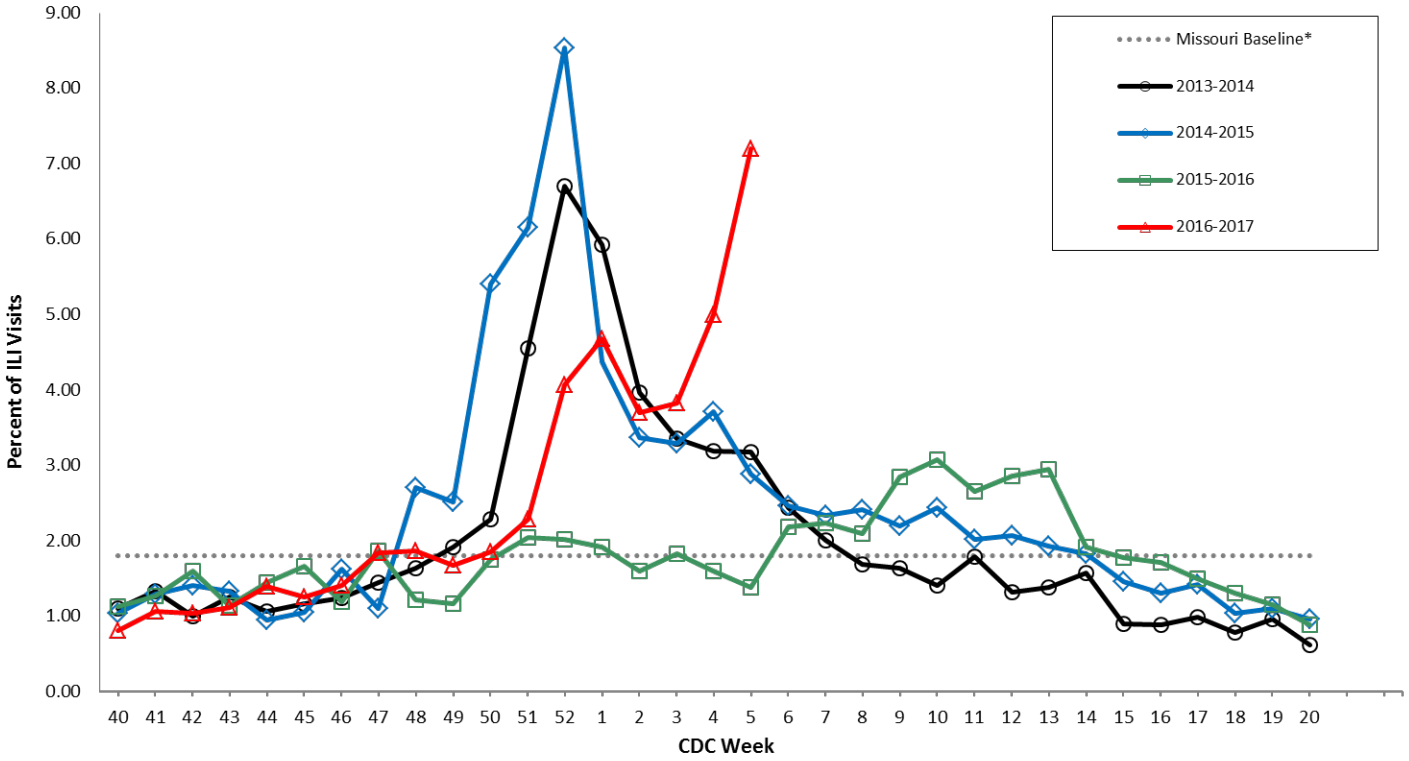
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017[*]



[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

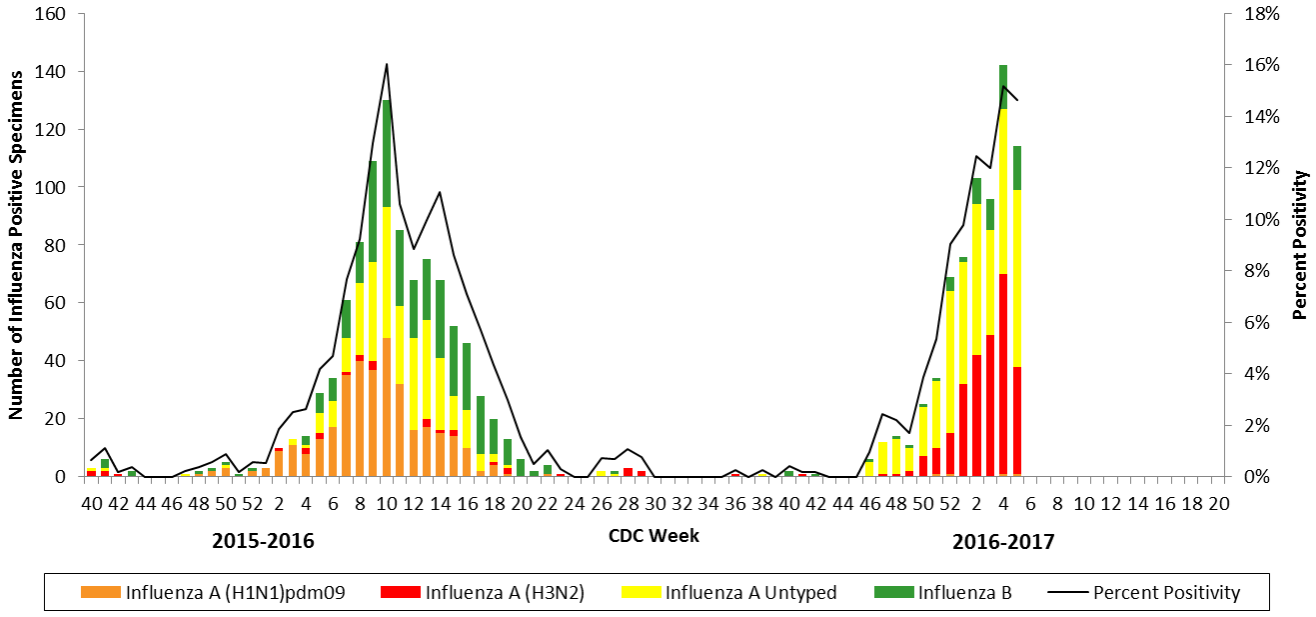
Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).

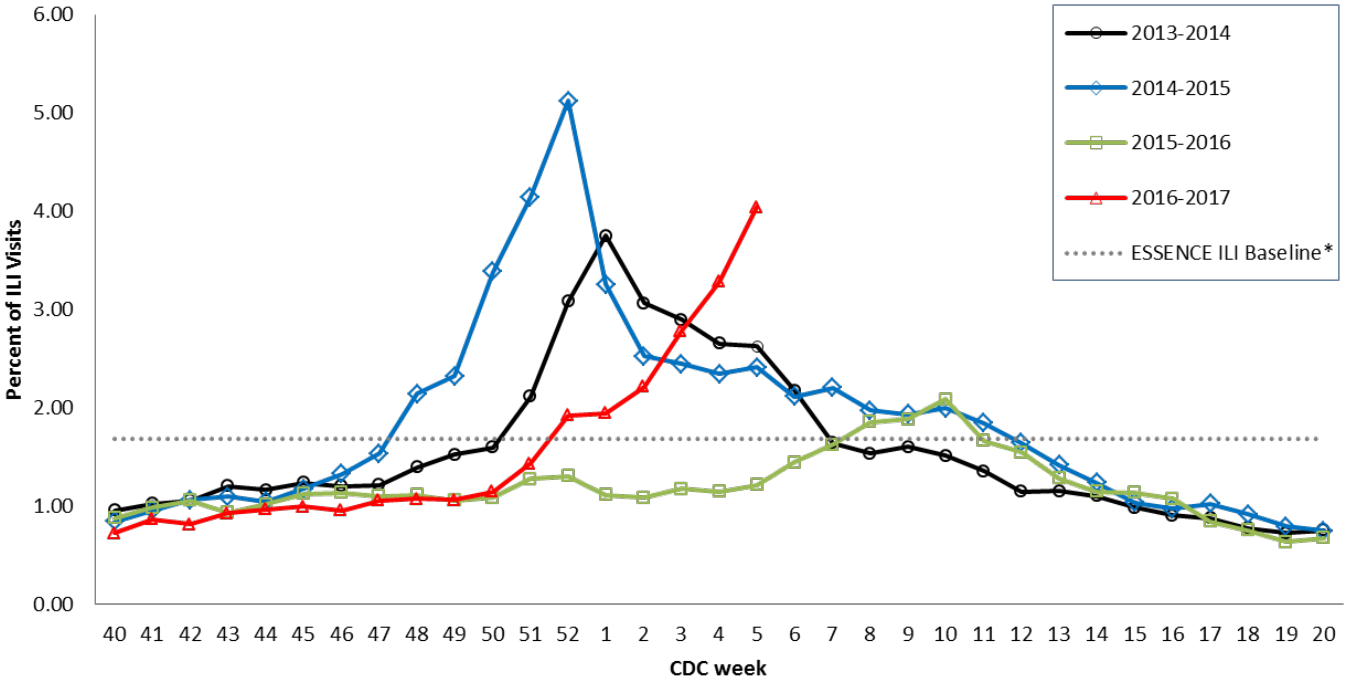
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



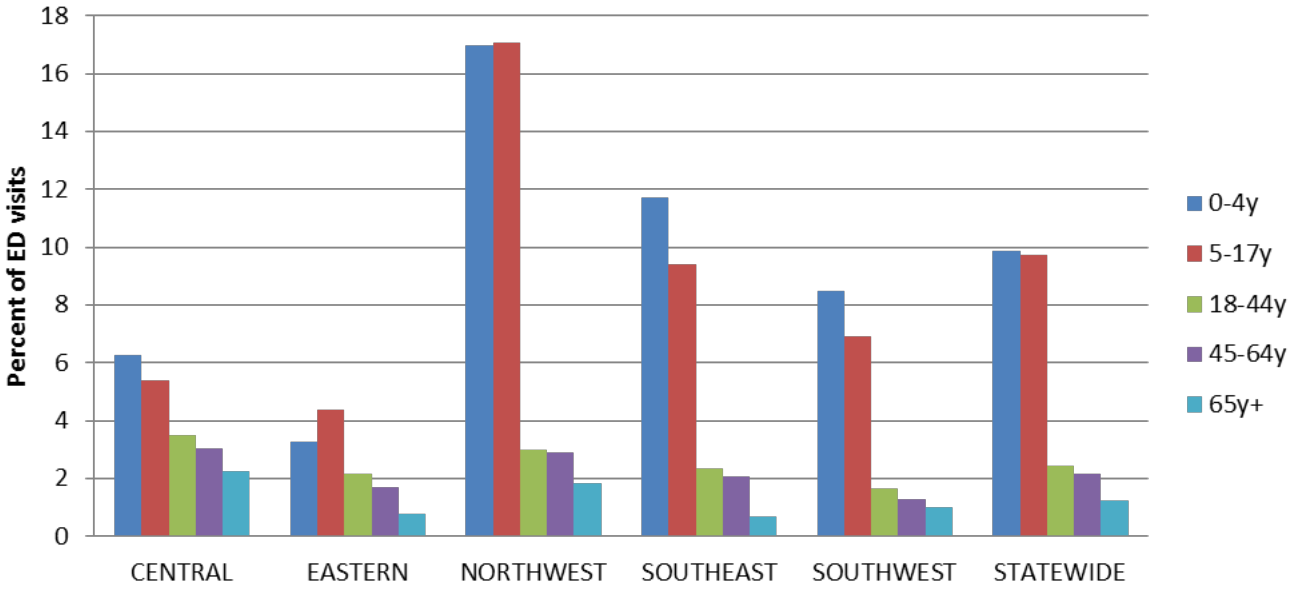
Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†



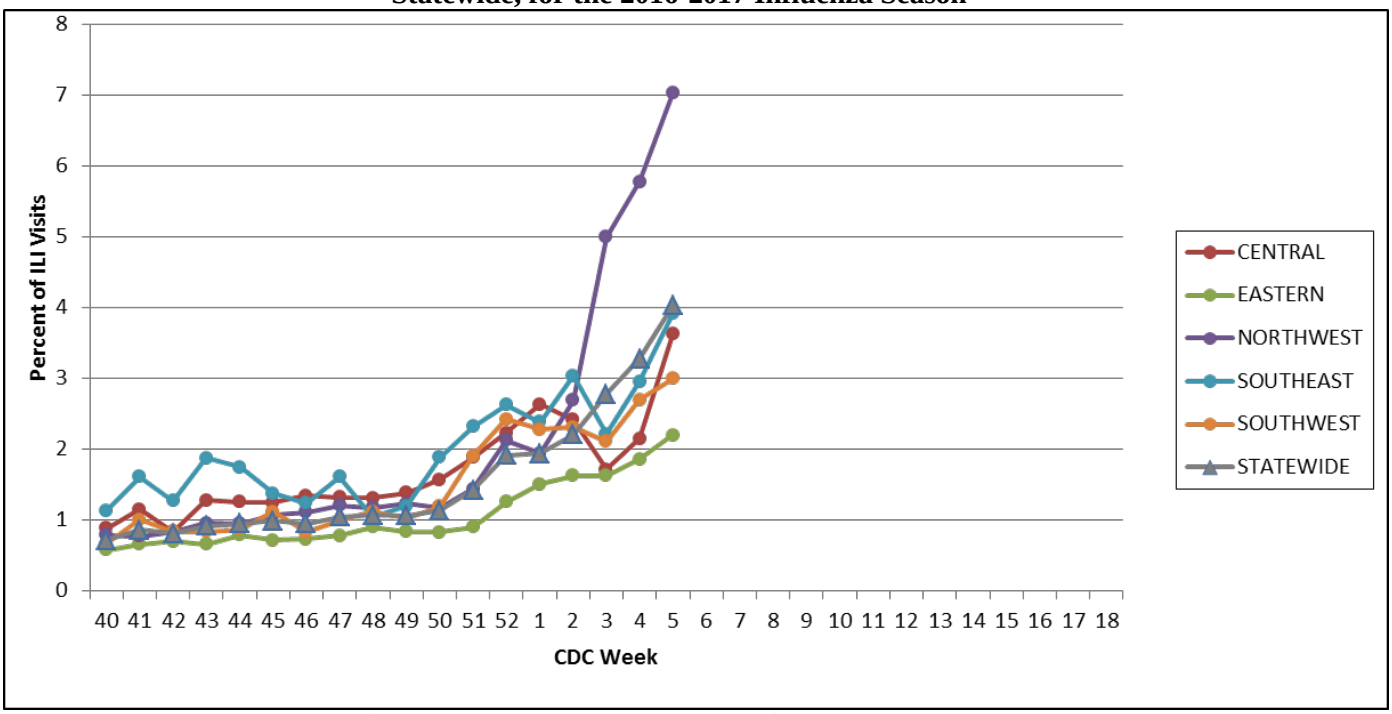
*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 5, 2017*



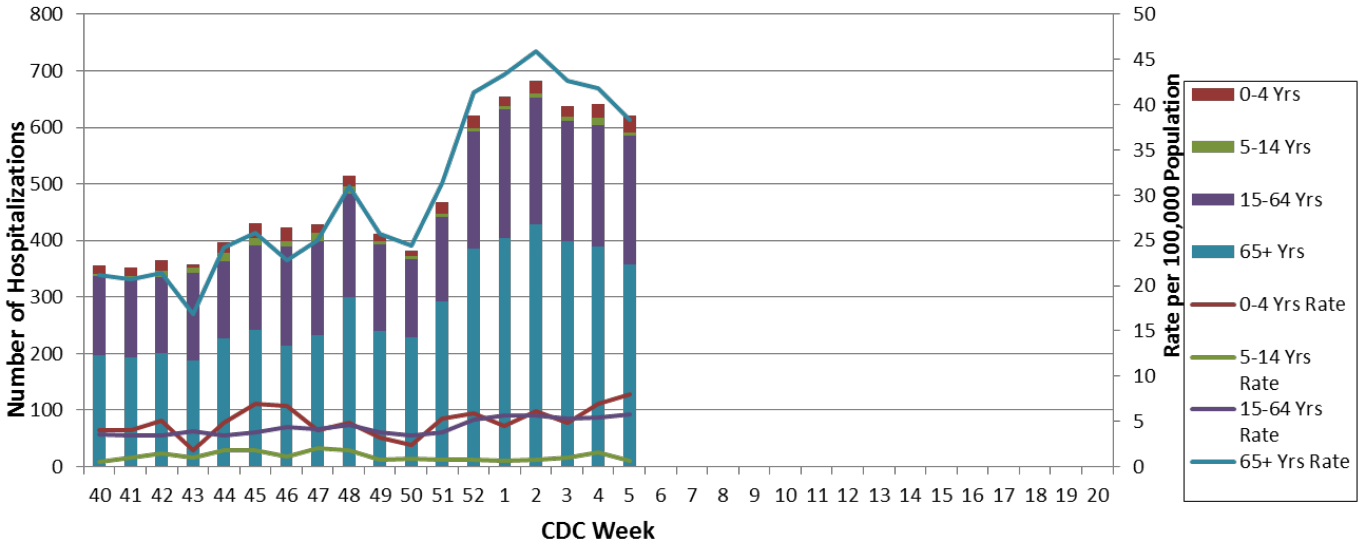
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Some of the ILI increase in the Northwest District may be due to surveillance changes implemented on January 16, 2017.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Some of the ILI increase in the Northwest District may be due to surveillance changes implemented on January 16, 2017.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 5, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView):
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 6: February 5 – February 11, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Widespread[2].
- A season-to-date total of 27,568 laboratory-positive[3] influenza cases (22,693 influenza A, 4,303 influenza B, and 572 untyped) have been reported in Missouri as of Week 6. The influenza type for reported cases season-to-date includes 82% influenza A, 16% influenza B, and 2% untyped. The highest season-to-date rate of reported laboratory-positive influenza cases is among children aged 0-4 years (963 cases per 100,000 population). Twenty-one laboratory-confirmed cases of influenza [19 influenza A (H3) and 2 influenza B (Victoria)] were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 6.
- The Centers for Disease Control and Prevention (CDC) has antigenically characterized two influenza isolates from Missouri, to date, this influenza season. Both viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus included in the 2016-2017 Northern Hemisphere vaccine formulation.
- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 7.93% and 4.19% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories also increased during Week 6.
- Twenty influenza-associated deaths have been reported in Missouri as of Week 6. During Week 5, 83 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 1,135 P&I associated deaths in Missouri.[5]
- Twenty-seven influenza or ILI-associated outbreaks have been reported in Missouri as of Week 6. Six influenza or ILI-associated school closures have been reported in Missouri as of Week 6.
- Influenza activity increased in the U.S. during Week 5. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Widespread is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2lRB3pI. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 6**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 6**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 6 (February 5 – February 11, 2017)*

Influenza Type	Week 4	Week 5	Week 6	2016-2017* Season-to-Date
Influenza A	4,106	4,786	4,098	22,693
Influenza B	682	984	1,070	4,303
Influenza Unknown Or Untyped	107	167	67	572
Total	4,895	5,937	5,235	27,568

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 6 (February 5 – February 11, 2017)*‡

Age Group	Week 6 Cases	Week 6 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	651	174	3,605	963
05-14	1,614	207	6,740	863
15-64	2,360	59	13,280	334
65+	610	65	3,941	423
Total	5,235	86	27,568	455

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 6 (February 5 – February 11, 2017)[*‡]

District	Week 6 Cases	Week 6 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	821	124	3,498	528
EA	1,344	60	7,189	318
NW	1,612	101	9,655	607
SE	881	185	2,961	622
SW	577	54	4,265	396
Total	5,235	86	27,568	455

[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
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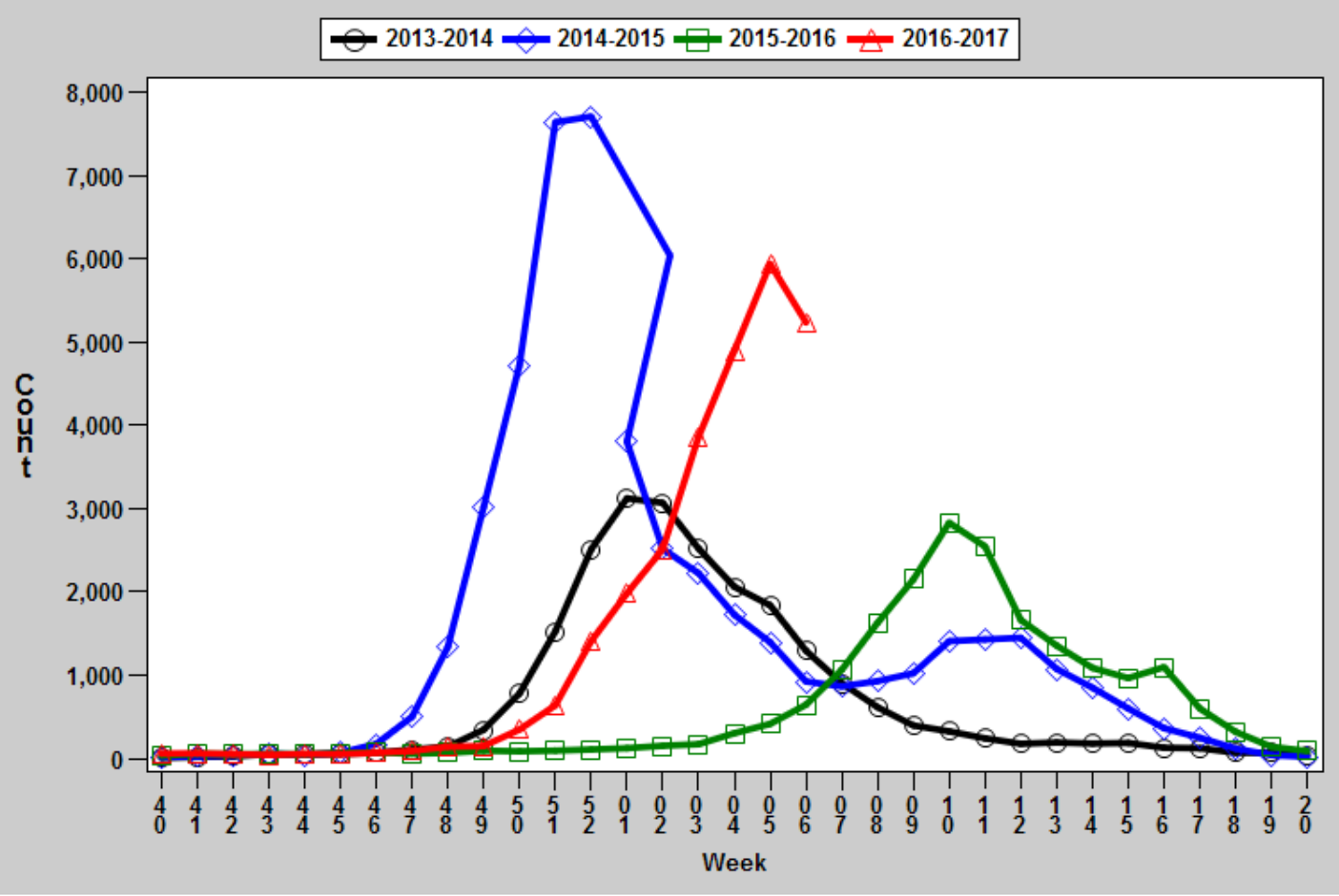
Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017[*]



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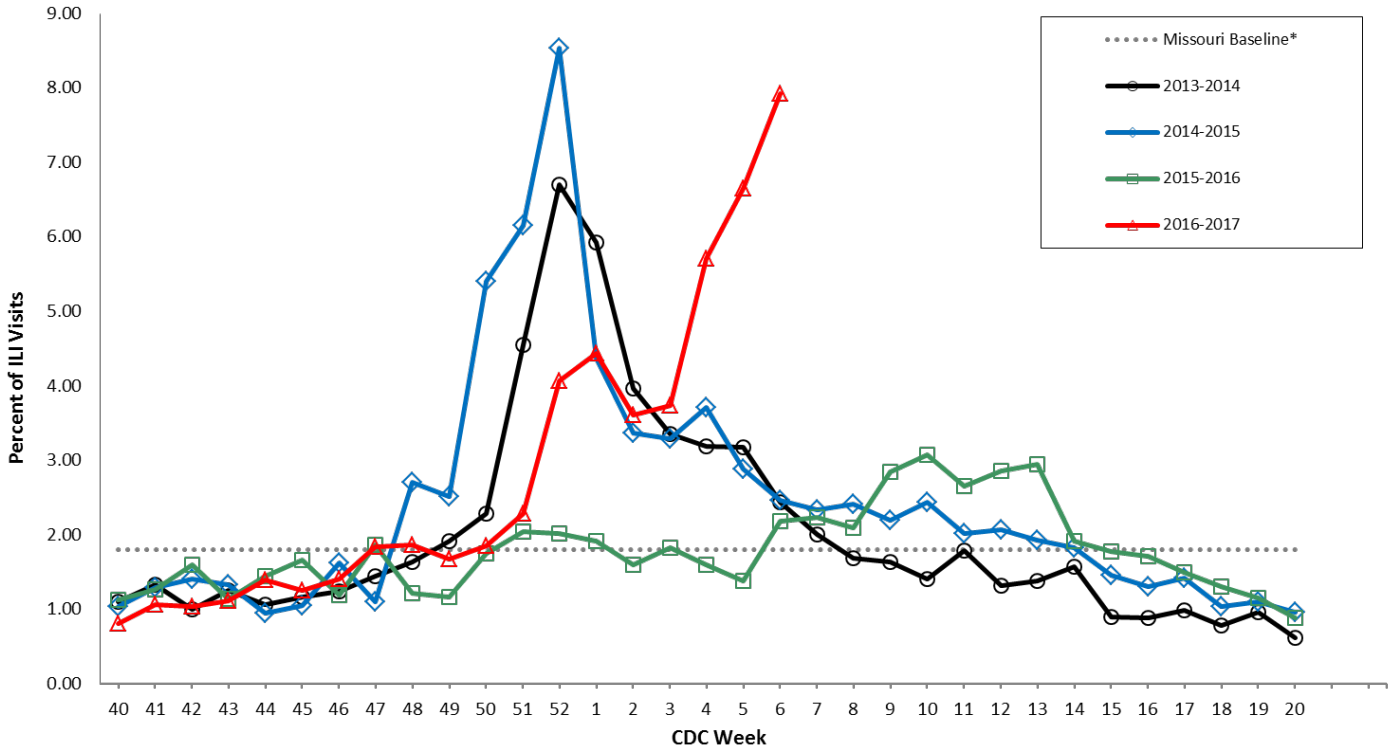
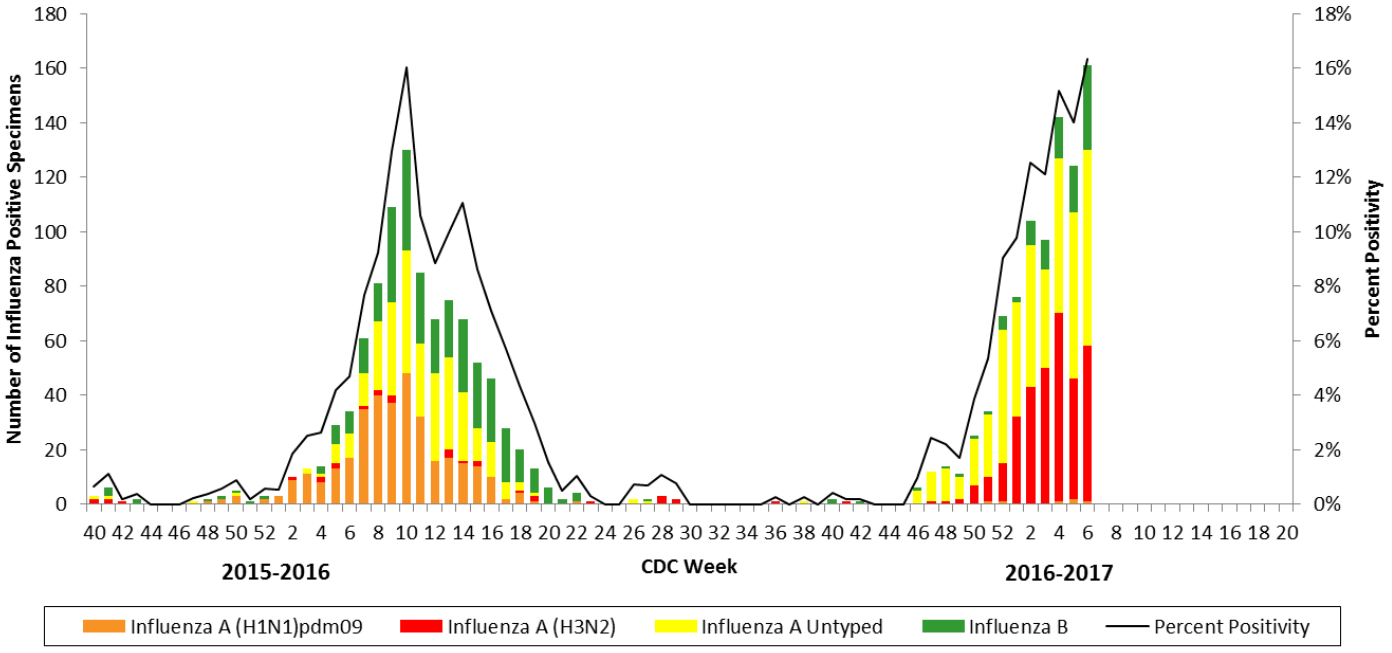
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
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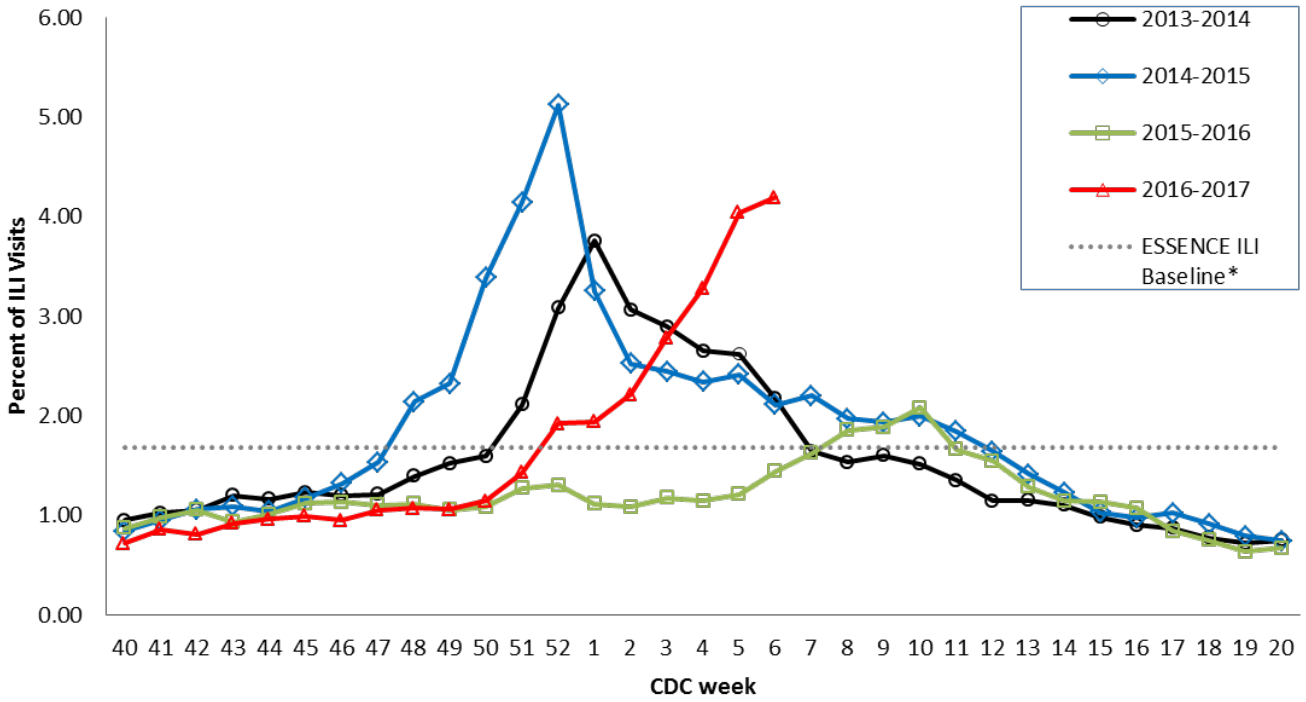

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Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
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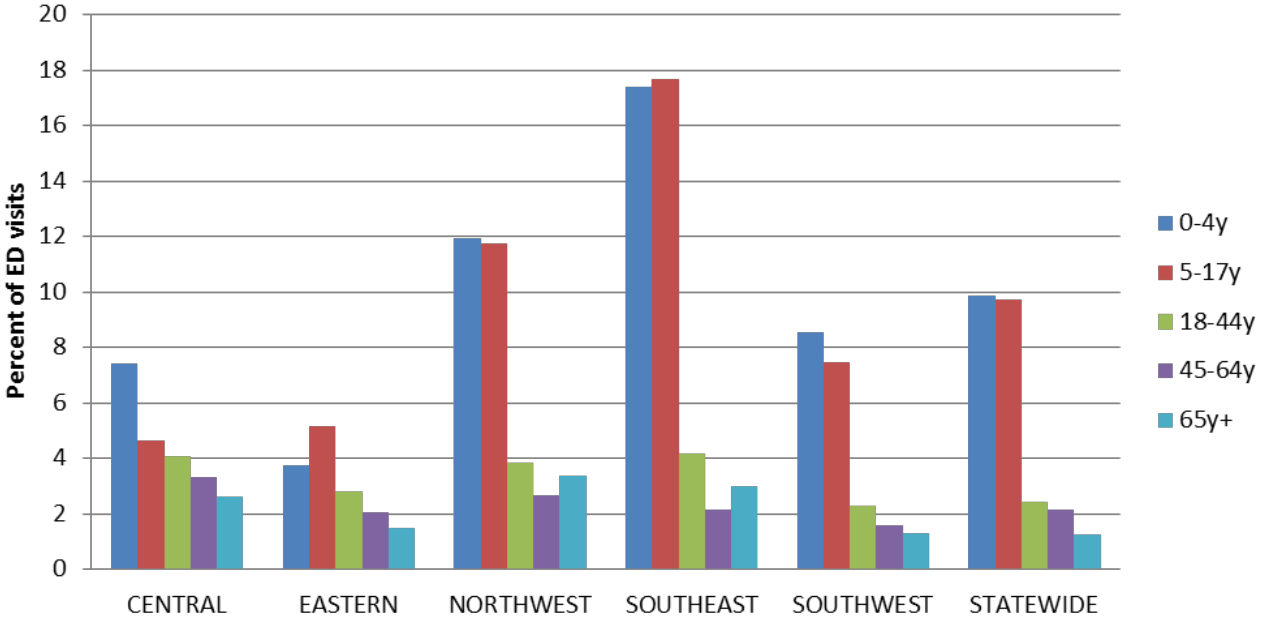
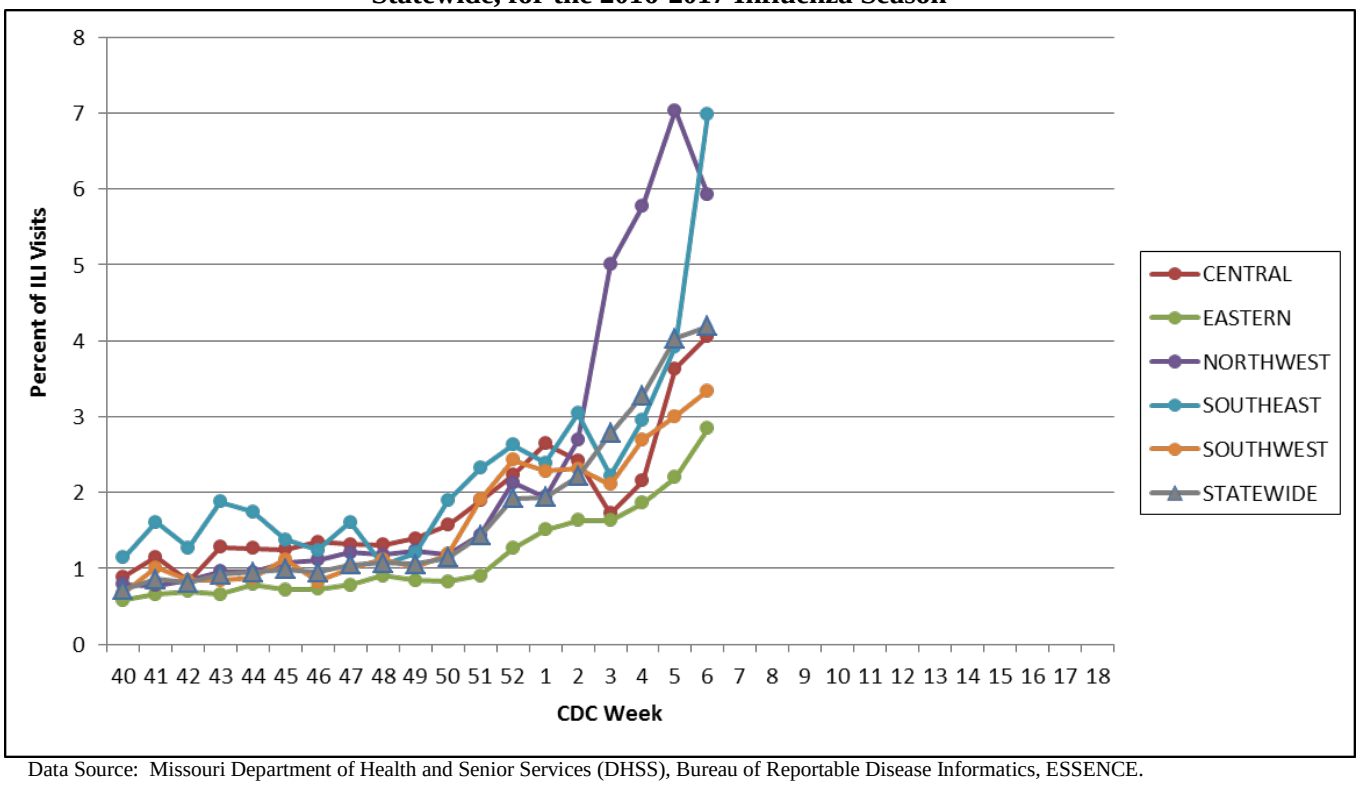


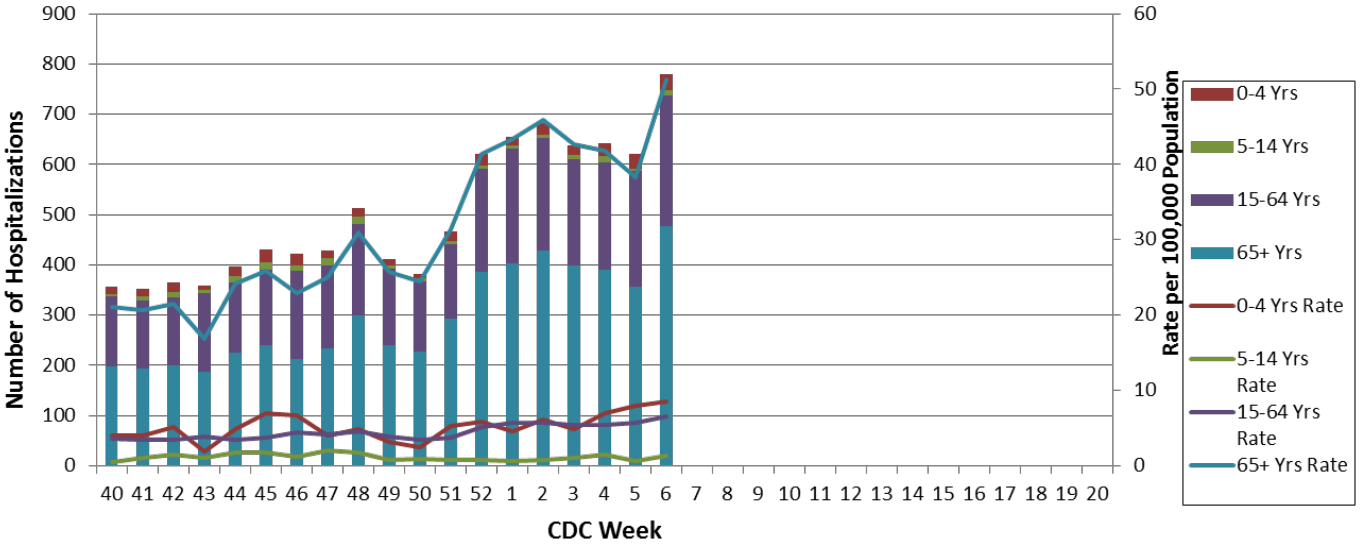
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Changes in ILI surveillance for the Northwest District were implemented on January 16, 2017.
†Not all data was available for the Northwest District during Week 6.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*†



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Changes in ILI surveillance for the Northwest District were implemented on January 16, 2017.
†Not all data was available for the Northwest District during Week 6.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 6, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView):
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 7: February 12 – February 18, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Widespread[2].
- A season-to-date total of 36,447 laboratory-positive[3] influenza cases (29,223 influenza A, 6,497 influenza B, and 727 untyped) have been reported in Missouri as of Week 7. The influenza type for reported cases season-to-date includes 80% influenza A, 18% influenza B, and 2% untyped. The highest season-to-date rates of reported laboratory-positive influenza cases are among children aged 0-4 years (1,301 cases per 100,000 population) and 5-14 years (1,196 cases per 100,000). One laboratory-confirmed case of influenza B (Victoria) was reported by the Missouri State Public Health Laboratory (MSPHL) during Week 7.
- The Centers for Disease Control and Prevention (CDC) has antigenically characterized two influenza isolates from Missouri, to date, this influenza season. Both viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus included in the 2016-2017 Northern Hemisphere vaccine formulation.
- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 4.95% and 5.1% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories also increased during Week 7.
- Twenty-eight influenza-associated deaths have been reported in Missouri as of Week 7. During Week 6, 79 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 1,214 P&I associated deaths in Missouri.[5]
- Twenty-nine influenza or ILI-associated outbreaks have been reported in Missouri as of Week 7. Nine influenza or ILI-associated school closures have been reported in Missouri as of Week 7.
- Influenza activity increased in the U.S. during Week 6. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Widespread is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as “flu”, “flulike”, “influenza” or “fever” plus “cough” or “fever” plus “sore throat”.

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2lp3tKh. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 7**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 7**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 7 (February 12 – February 18, 2017)*

Influenza Type	Week 5	Week 6	Week 7	2016-2017* Season-to-Date
Influenza A	4,974	6,281	4,090	29,223
Influenza B	1,053	1,726	1,453	6,497
Influenza Unknown Or Untyped	168	165	56	727
Total	6,195	8,172	5,599	36,447

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 7 (February 12 – February 18, 2017)*‡

Age Group	Week 7 Cases	Week 7 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	820	219	4,869	1,301
05-14	1,691	216	9,343	1,196
15-64	2,335	59	17,151	431
65+	753	81	5,082	545
Total	5,599	92	36,447	601

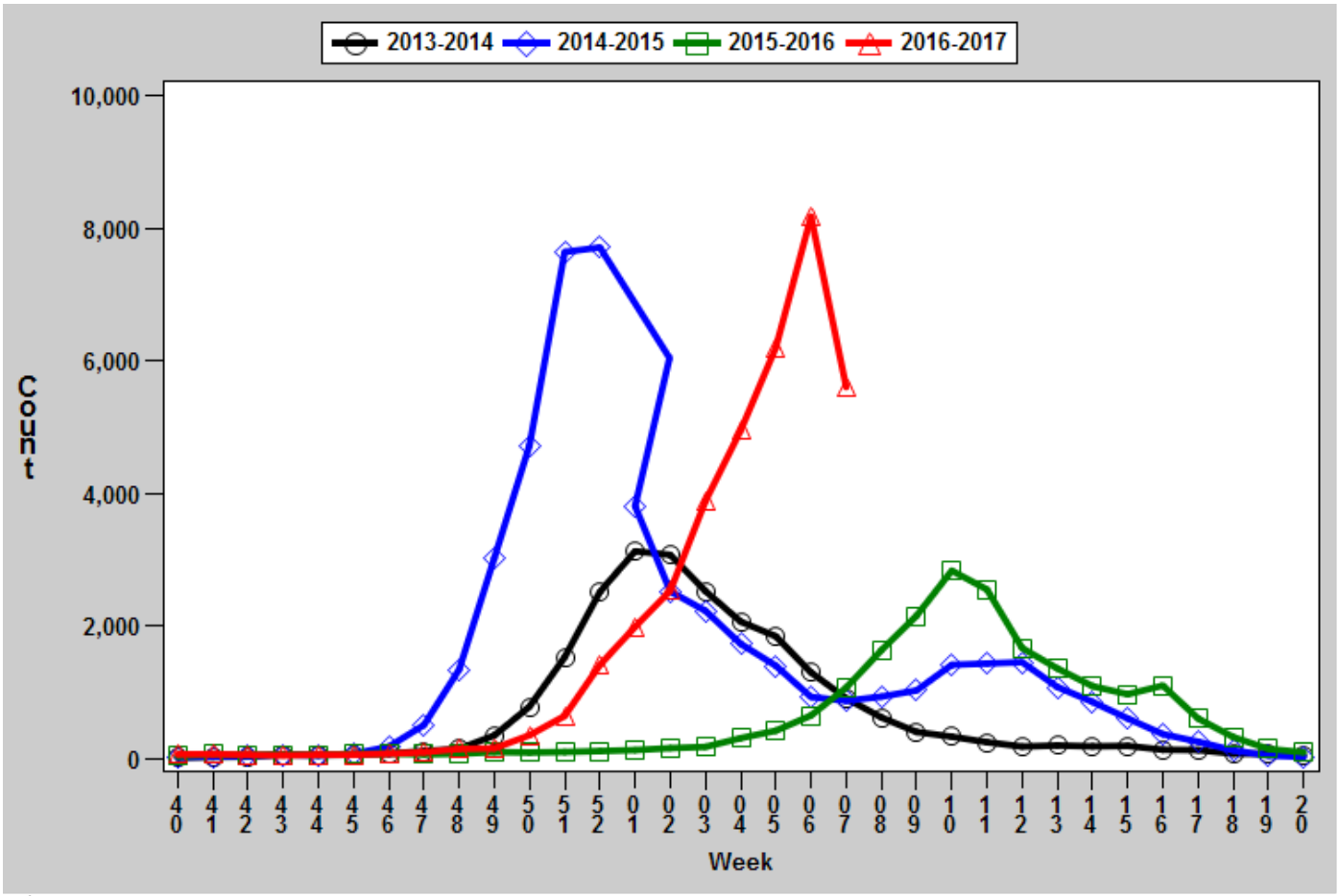
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 7 (February 12 – February 18, 2017)[*‡]

District	Week 7 Cases	Week 7 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	455	69	4,056	612
EA	1,966	87	9,803	434
NW	1,340	84	12,702	798
SE	997	209	4,330	910
SW	841	78	5,556	516
Total	5,599	92	36,447	601

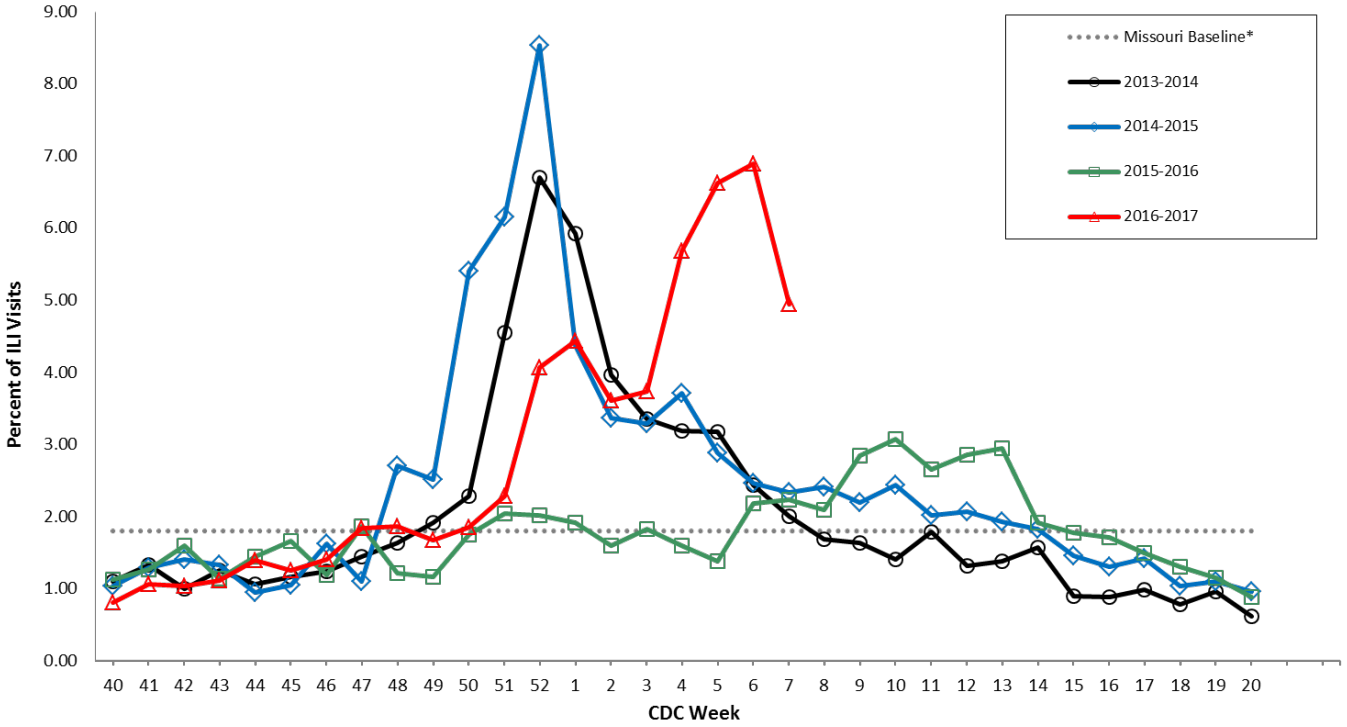
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017[*]



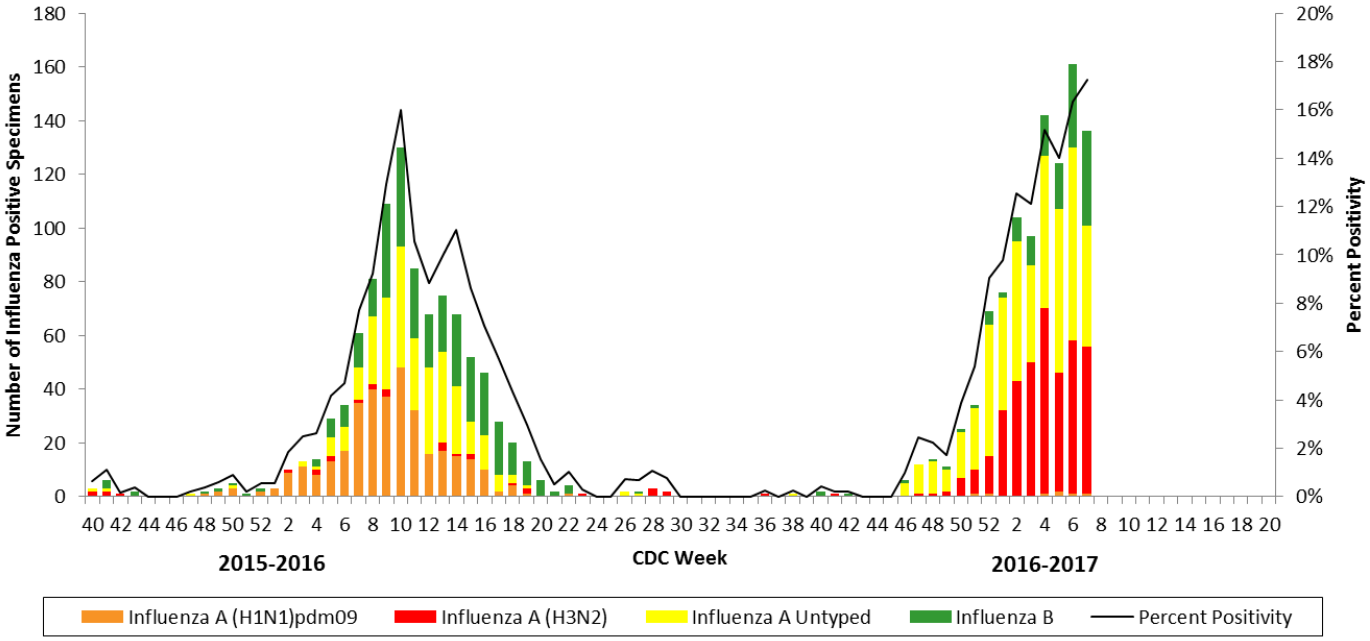
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



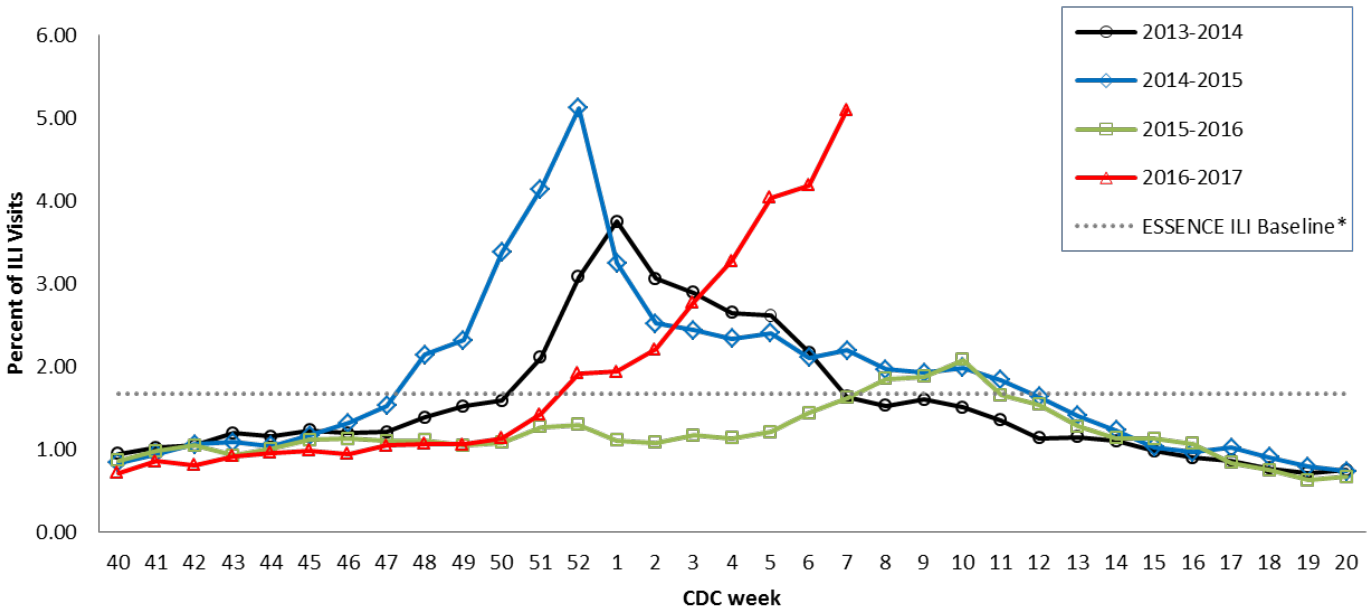
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

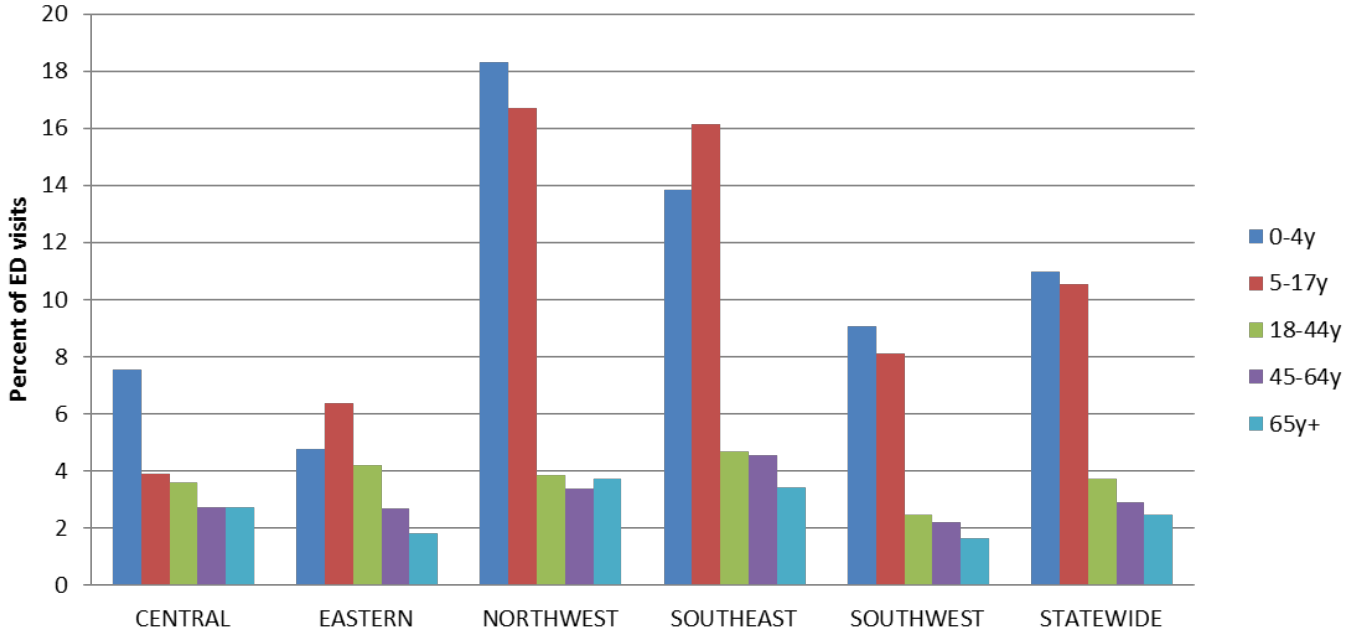
Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†



*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

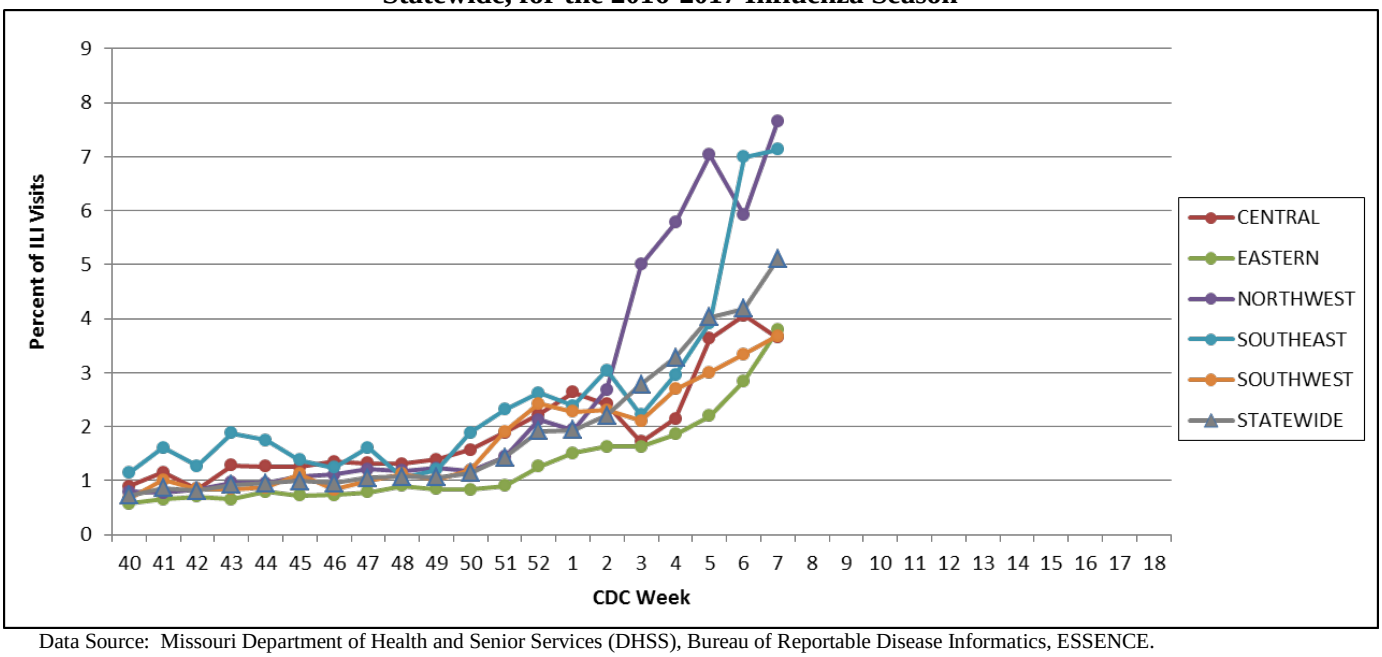
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 7, 2017



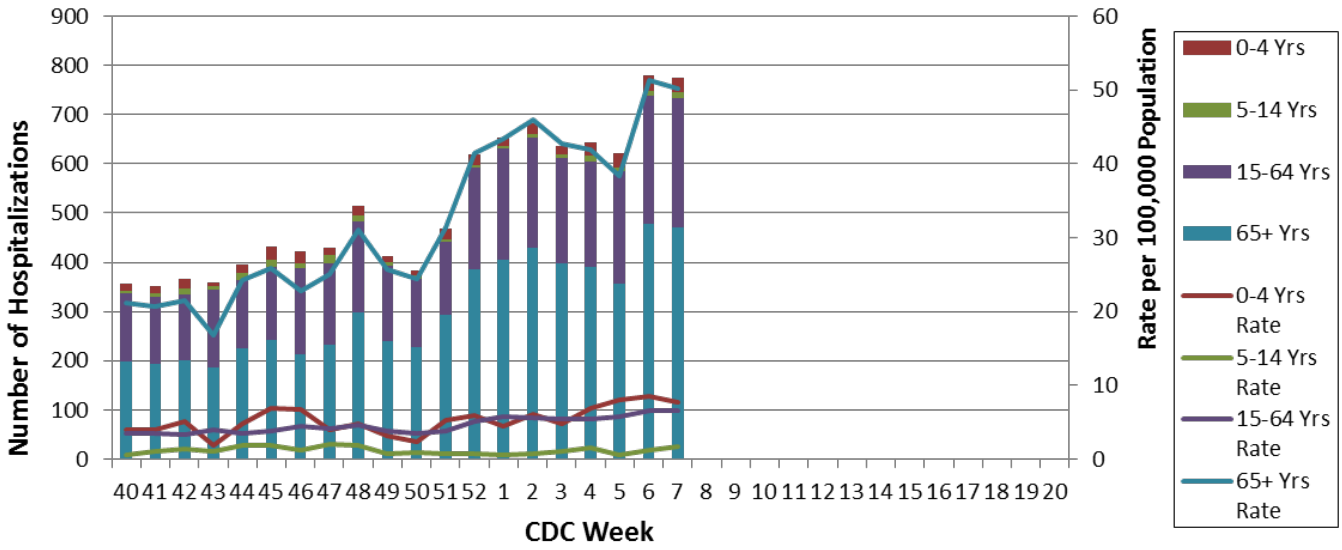
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*†



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Changes in ILI surveillance for the Northwest District were implemented on January 16, 2017.
†Not all data was available for the Northwest District during Week 6.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 7, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView):
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World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 8: February 19 – February 25, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Widespread[2].

- A season-to-date total of 44,961 laboratory-positive[3] influenza cases (34,712 influenza A, 9,362 influenza B, and 887 untyped) have been reported in Missouri as of Week 8. The influenza type for reported cases season-to-date includes 77% influenza A, 21% influenza B, and 2% untyped. The highest season-to-date rates of reported laboratory-positive influenza cases are among children aged 0-4 years (1,630 cases per 100,000 population) and 5-14 years (1,519 cases per 100,000). Eleven laboratory-confirmed case of influenza [eight influenza A (H3), two influenza B (Yamagata), and one influenza A (H1N1)] were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 8.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized six influenza isolates from Missouri, to date, this influenza season. Four viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus, one virus was antigenically similar to the B/Brisbane/60/2008-like virus, and one virus was antigenically similar to the B/Phuket/3073/2013-like virus. An A/Hong Kong/4801/2014-like (H3N2) virus and a B/Brisbane/60/2008-like virus are included in the 2016-2017 Northern Hemisphere trivalent and quadrivalent vaccine formulations. A B/Phuket/3073/2013-like virus is included in the 2016-2017 Northern Hemisphere quadrivalent vaccine formulation.

- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 4.82% and 4.25% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories decreased during Week 8.

- Thirty-seven influenza-associated deaths have been reported in Missouri as of Week 8. During Week 7, 87 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 1,301 P&I associated deaths in Missouri.[5]

- Thirty-eight influenza or ILI-associated outbreaks have been reported in Missouri as of Week 8. Eleven influenza or ILI-associated school closures have been reported in Missouri as of Week 8.

- Influenza activity decreased slightly but remained elevated in the U.S. during Week 7. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Widespread is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2lXDf0a. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 8**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 8**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 8 (February 19 – February 25, 2017)*

Influenza Type	Week 6	Week 7	Week 8	2016-2017* Season-to-Date
Influenza A	6,610	5,969	3,040	34,712
Influenza B	1,808	2,352	1,832	9,362
Influenza Unknown Or Untyped	196	132	53	887
Total	8,614	8,453	4,925	44,961

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 8 (February 19 – February 25, 2017)*‡

Age Group	Week 8 Cases	Week 8 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	769	205	6,101	1,630
05-14	1,472	188	11,871	1,519
15-64	1,983	50	20,740	522
65+	701	75	6,247	670
Total	4,925	81	44,961	741

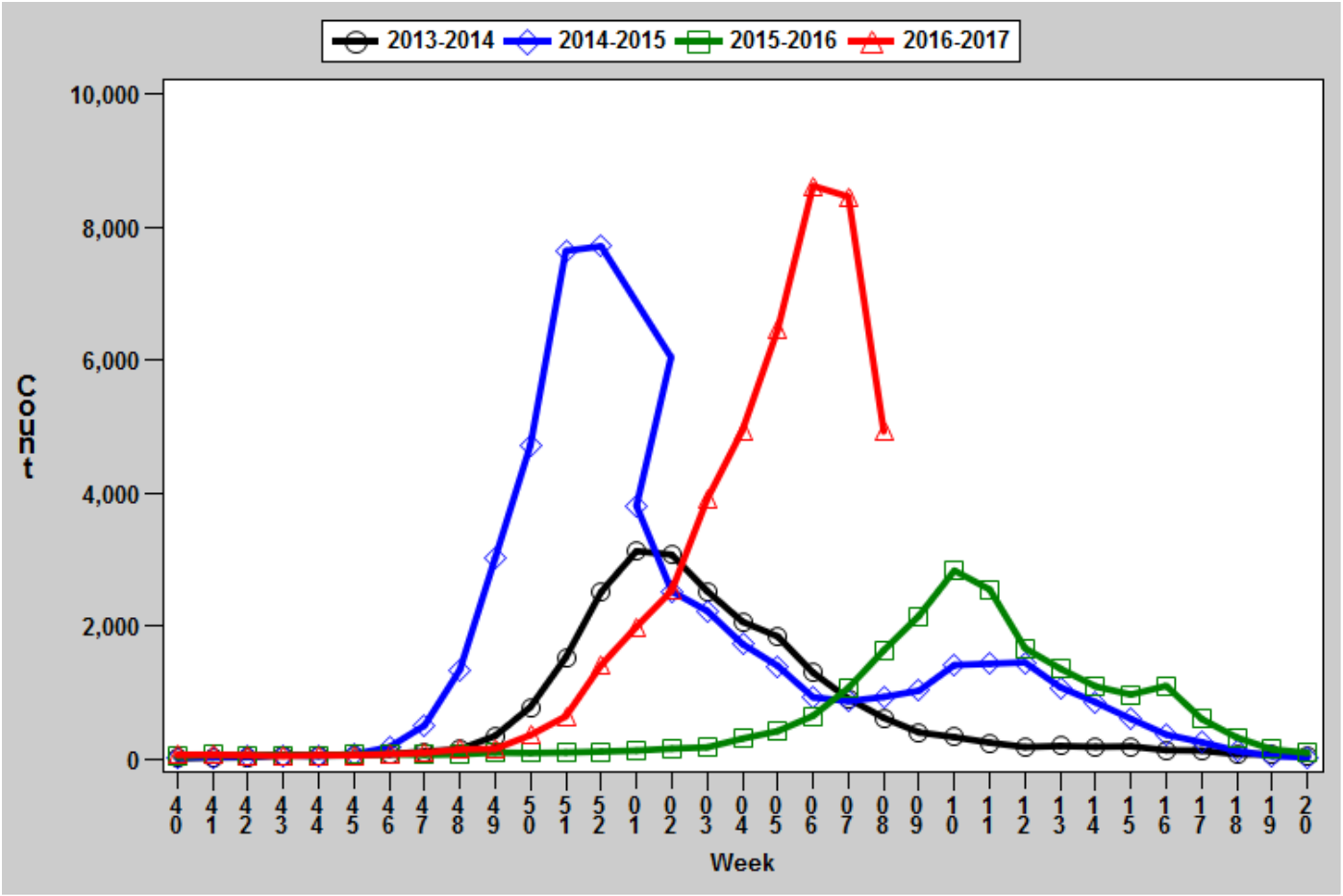
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 8 (February 19 – February 25, 2017)[*‡]

District	Week 8 Cases	Week 8 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	405	61	4,731	714
EA	1,862	82	12,144	538
NW	1,543	97	16,000	1,005
SE	676	142	5,659	1,189
SW	439	41	6,427	597
Total	4,925	81	44,961	741

[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017[*]



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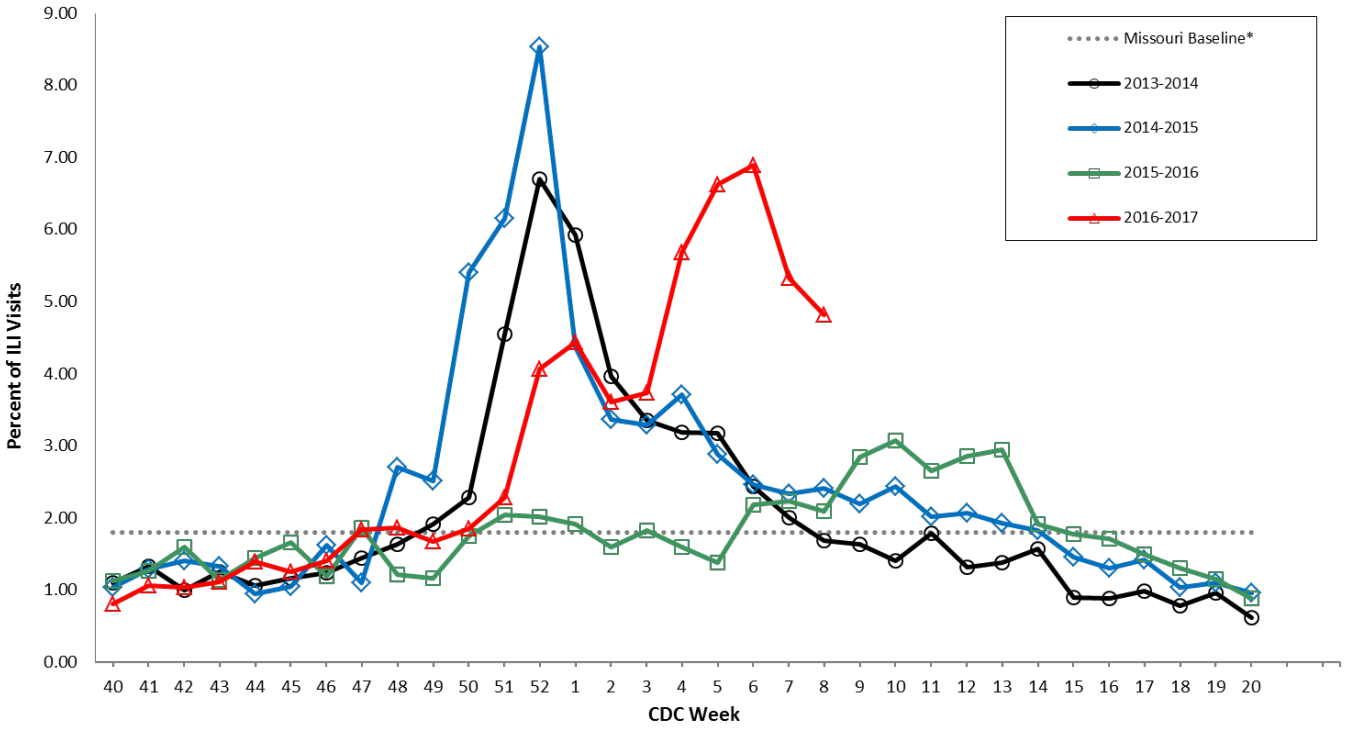
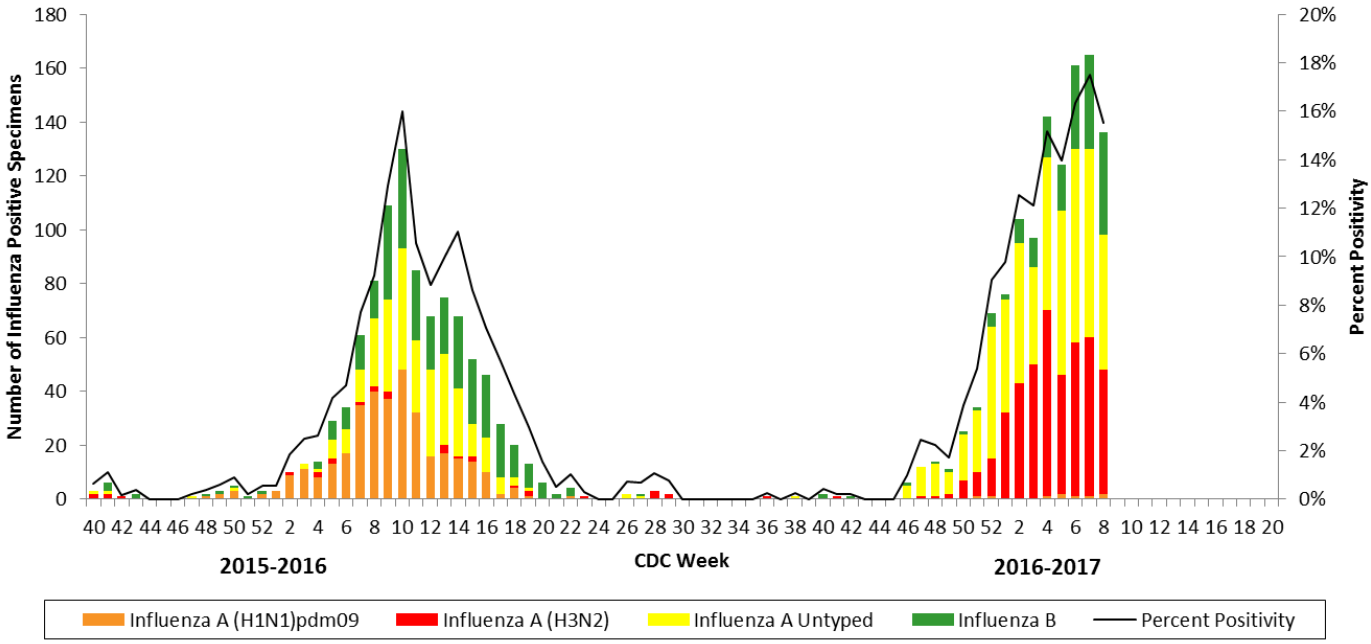
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like-Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



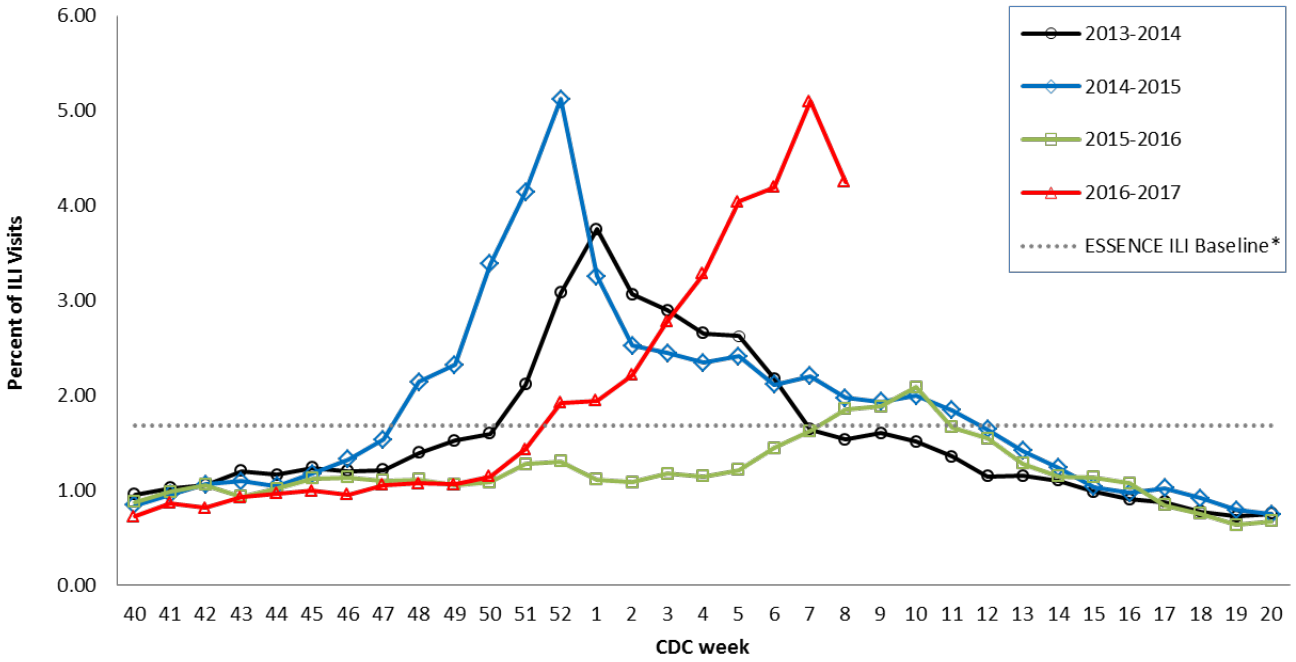
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



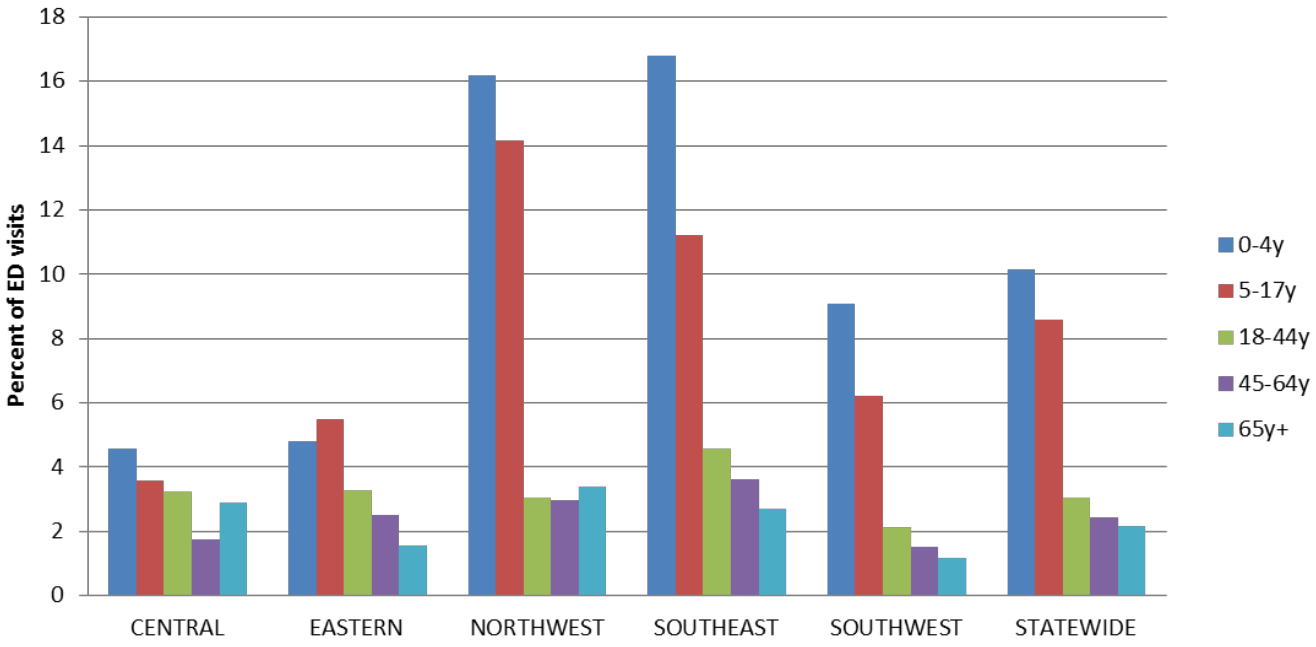
Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†



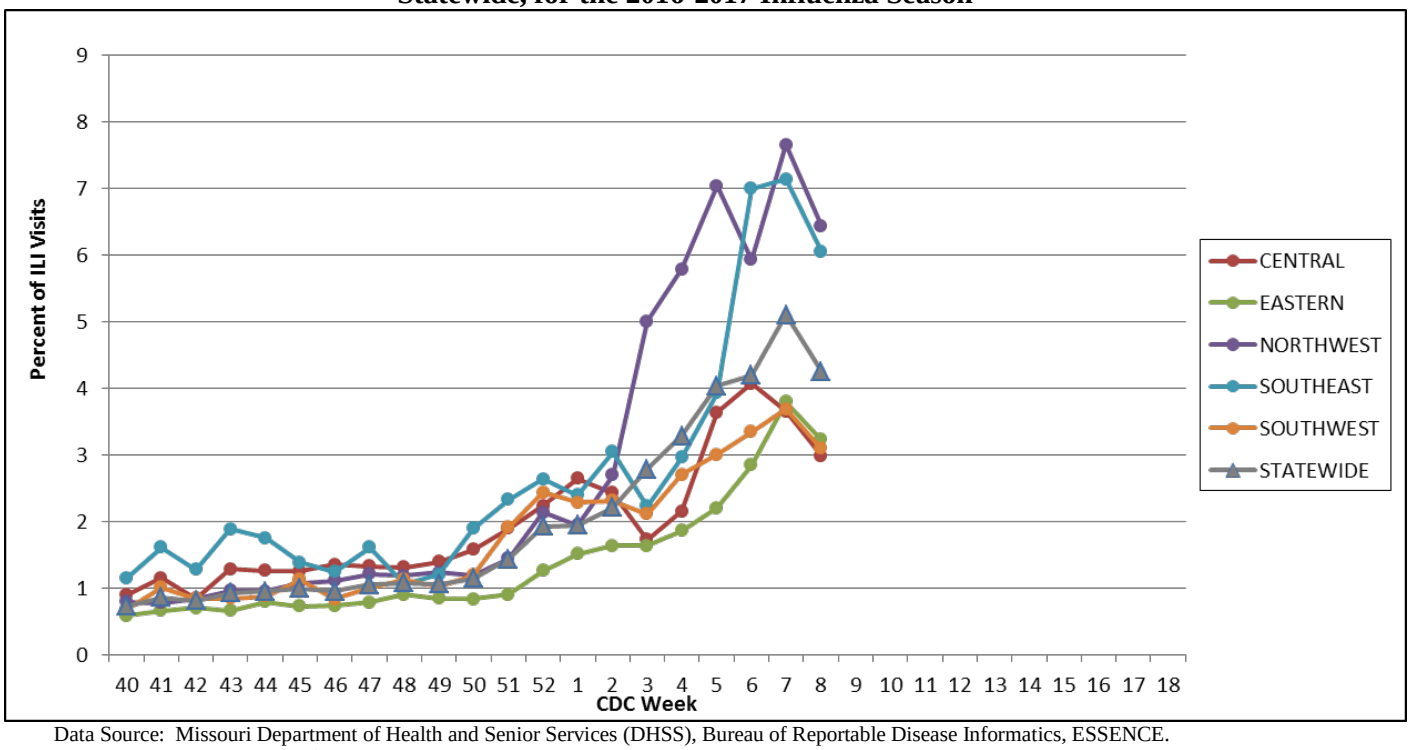
*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 8, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*†



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
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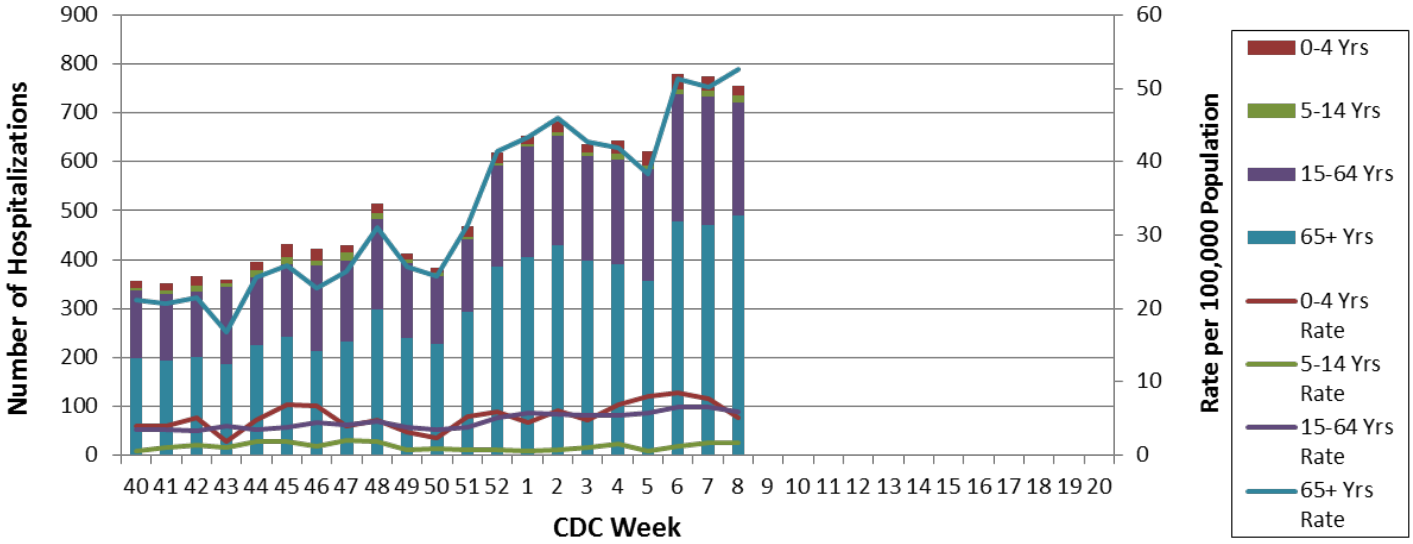
Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 8, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

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Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 9: February 26 – March 4, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Widespread[2].

- A season-to-date total of 52,141 laboratory-positive[3] influenza cases (38,938 influenza A, 12,194 influenza B, and 1,009 untyped) have been reported in Missouri as of Week 9. The influenza type for reported cases season-to-date includes 75% influenza A, 23% influenza B, and 2% untyped. The highest season-to-date rates of reported laboratory-positive influenza cases are among children aged 0-4 years (1,959 cases per 100,000 population) and 5-14 years (1,774 cases per 100,000). Five laboratory-confirmed cases of influenza A (H3) were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 9.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized seven influenza isolates from Missouri, to date, this influenza season. Five viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus, one virus was antigenically similar to the B/Brisbane/60/2008-like virus, and one virus was antigenically similar to the B/Phuket/3073/2013-like virus. An A/Hong Kong/4801/2014-like (H3N2) virus and a B/Brisbane/60/2008-like virus are included in the 2016-2017 Northern Hemisphere trivalent and quadrivalent vaccine formulations. A B/Phuket/3073/2013-like virus is included in the 2016-2017 Northern Hemisphere quadrivalent vaccine formulation.

- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 3.21% and 3.37% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories decreased but remained elevated during Week 9.

- Forty-three influenza-associated deaths have been reported in Missouri as of Week 9. During Week 8, 92 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 1,393 P&I associated deaths in Missouri.[5]

- Forty influenza or ILI-associated outbreaks have been reported in Missouri as of Week 9. Eleven influenza or ILI-associated school closures have been reported in Missouri as of Week 9.

- Influenza activity remained elevated in the U.S. during Week 8. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Widespread is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2neEzLQ. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 9**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 9**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 9 (February 26 – March 4, 2017)*

Influenza Type	Week 7	Week 8	Week 9	2016-2017* Season-to-Date
Influenza A	6,571	4,129	2,169	38,938
Influenza B	2,599	2,582	1,639	12,194
Influenza Unknown Or Untyped	159	119	27	1,009
Total	9,329	6,830	3,835	52,141

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 9 (February 26 – March 4, 2017)*‡

Age Group	Week 9 Cases	Week 9 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	609	163	7,332	1,959
05-14	1,120	143	13,865	1,774
15-64	1,578	40	23,734	597
65+	528	57	7,208	773
Total	3,835	63	52,141	860

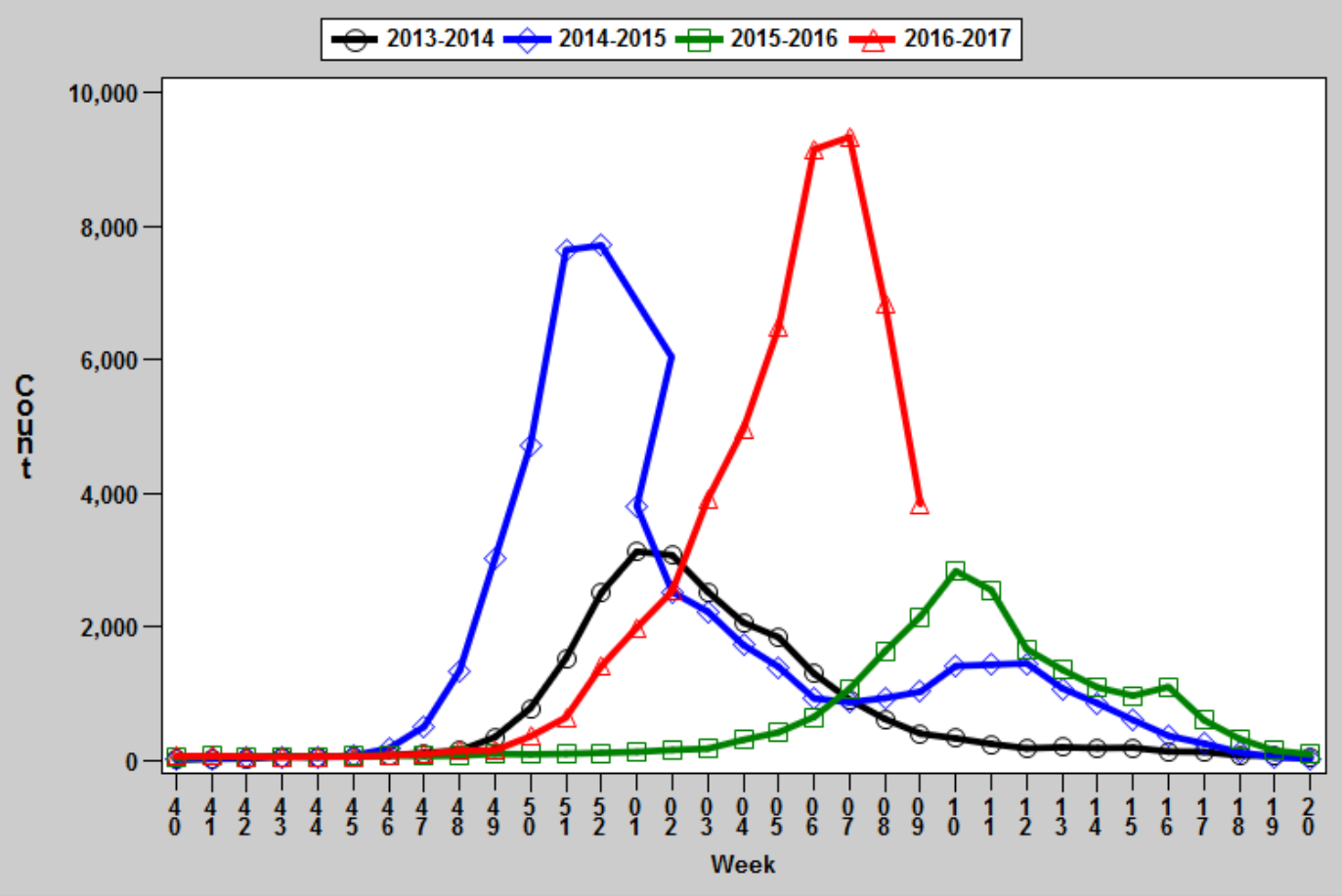
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 9 (February 26 – March 4, 2017)[*‡]

District	Week 9 Cases	Week 9 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	192	29	5,257	794
EA	1,768	78	15,311	678
NW	665	42	17,282	1,086
SE	695	146	6,888	1,447
SW	515	48	7,403	688
Total	3,835	63	52,141	860

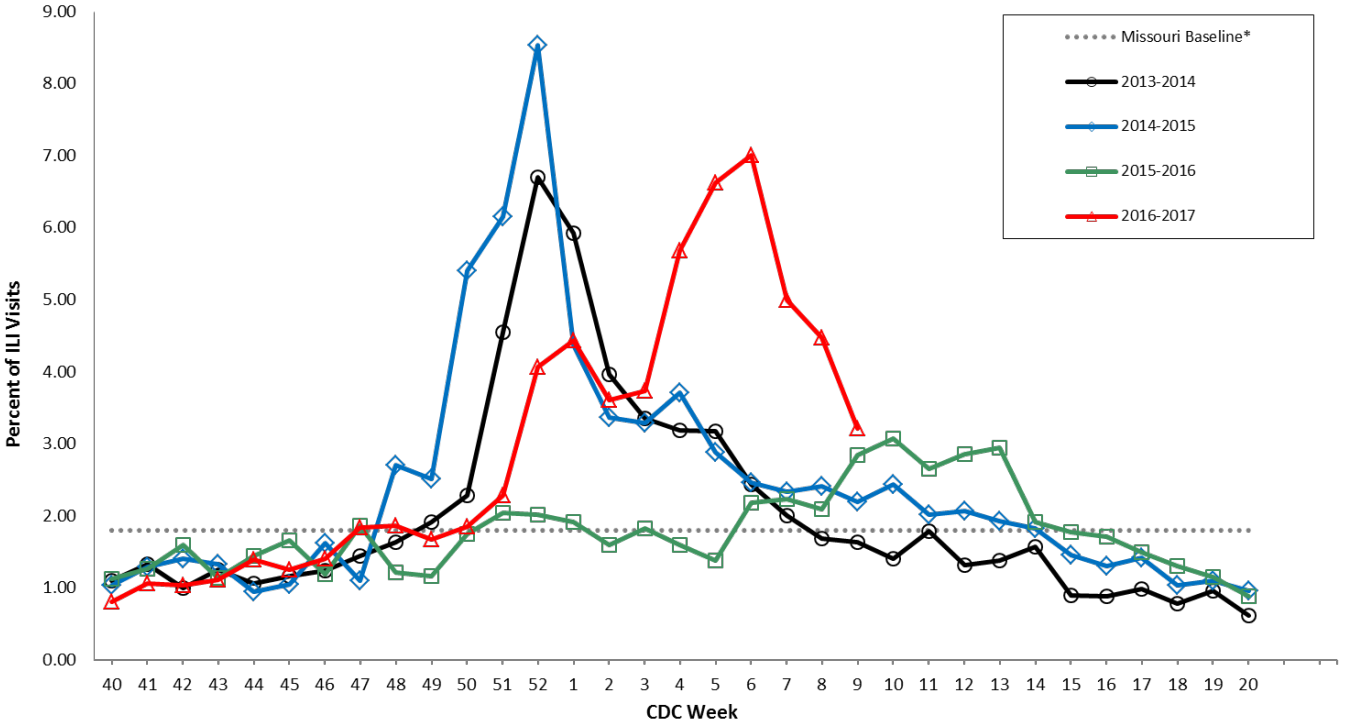
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017[*]



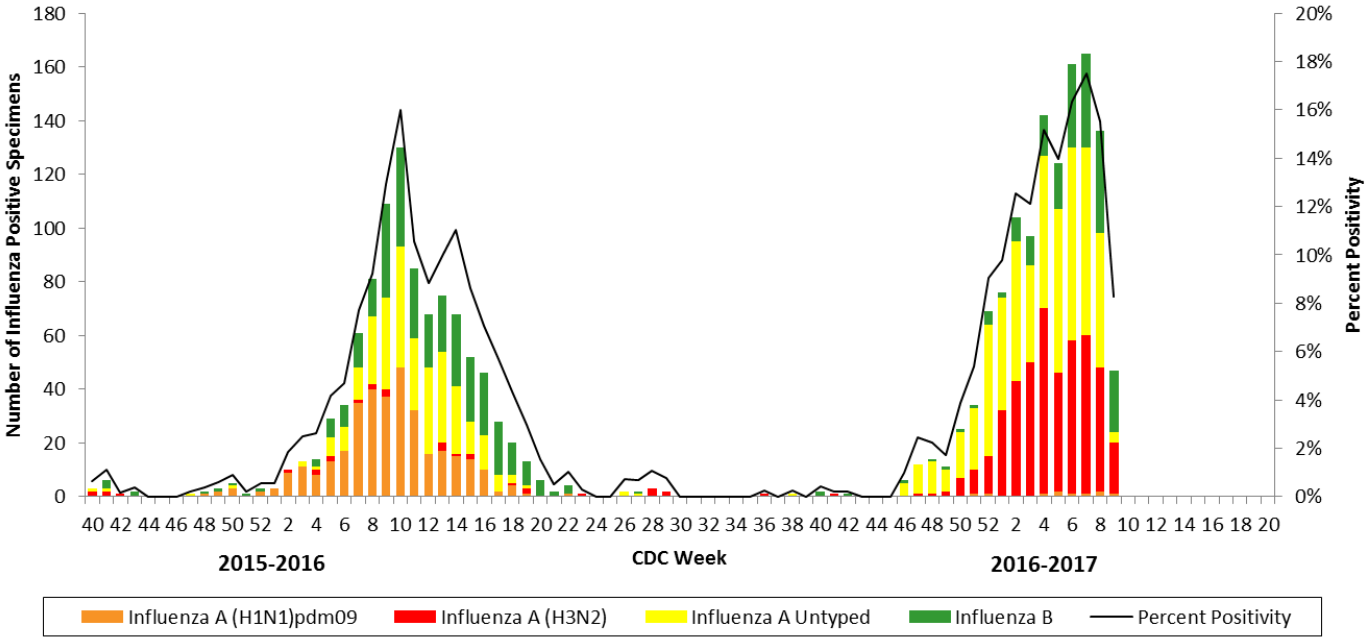
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



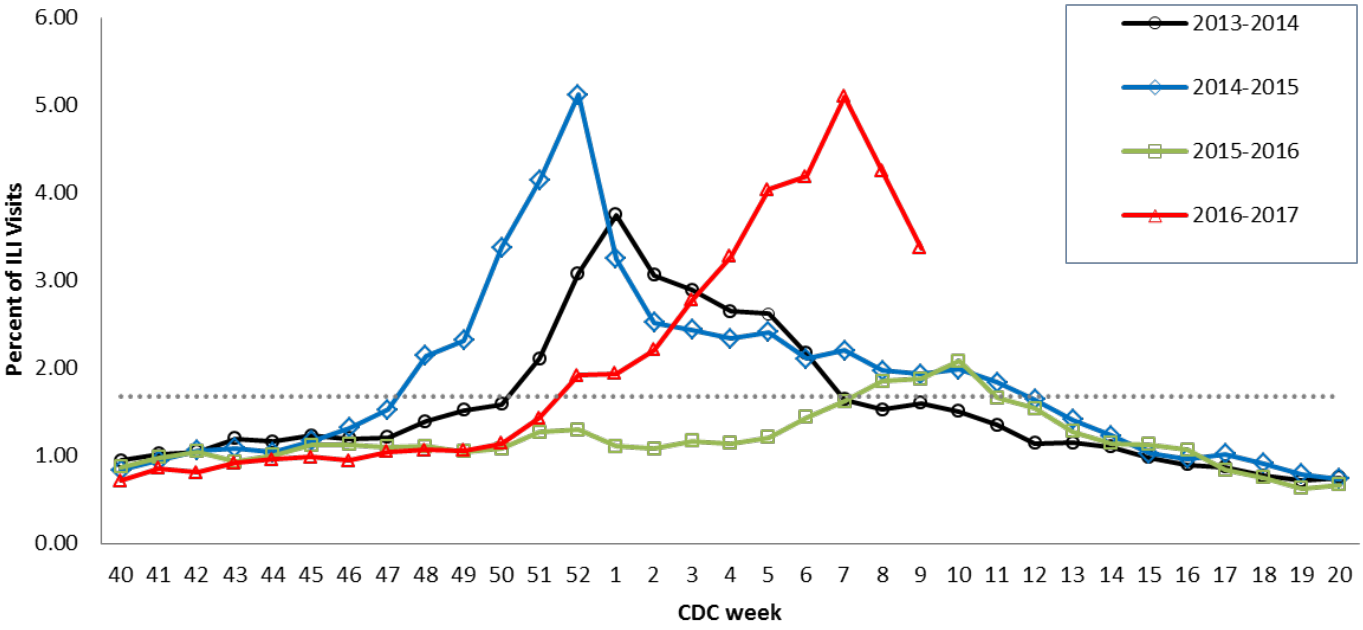
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

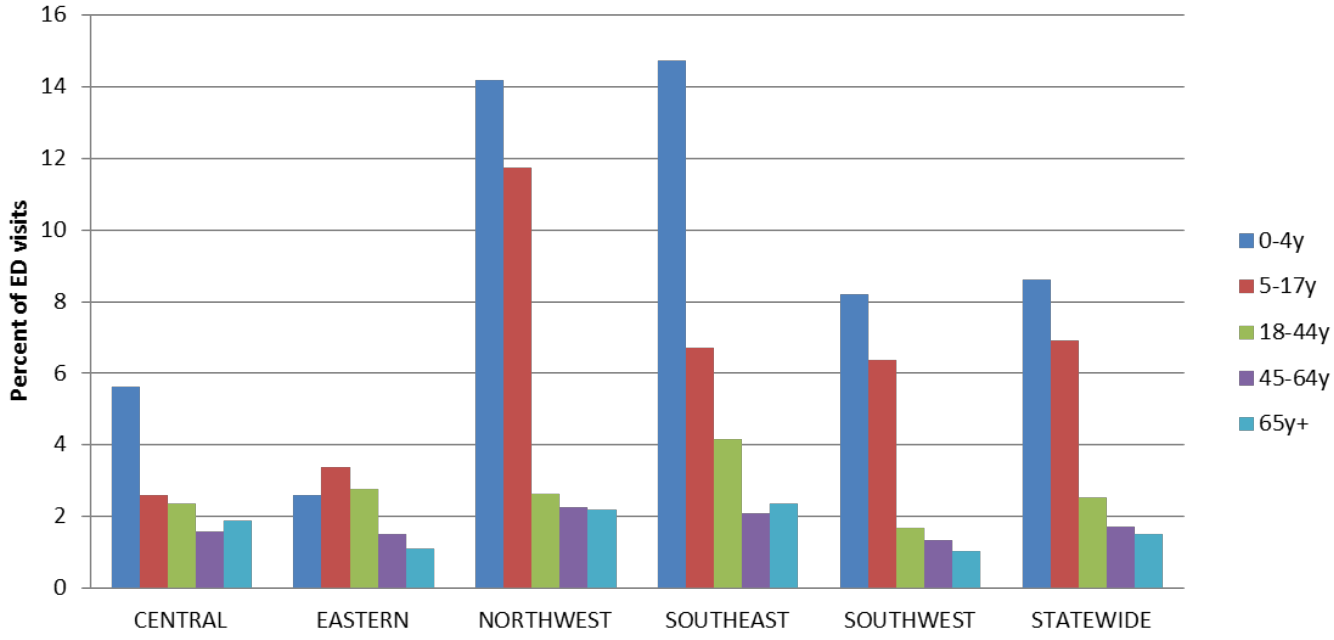
Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†



*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

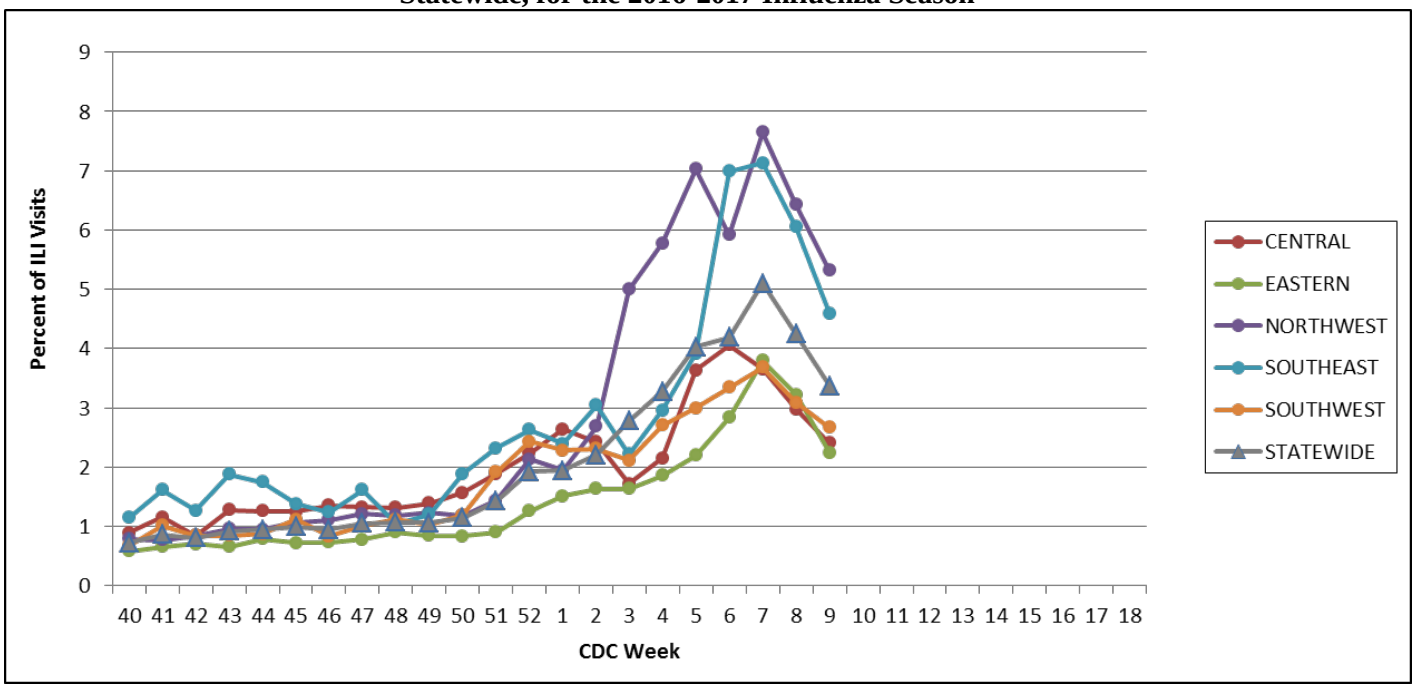
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 9, 2017



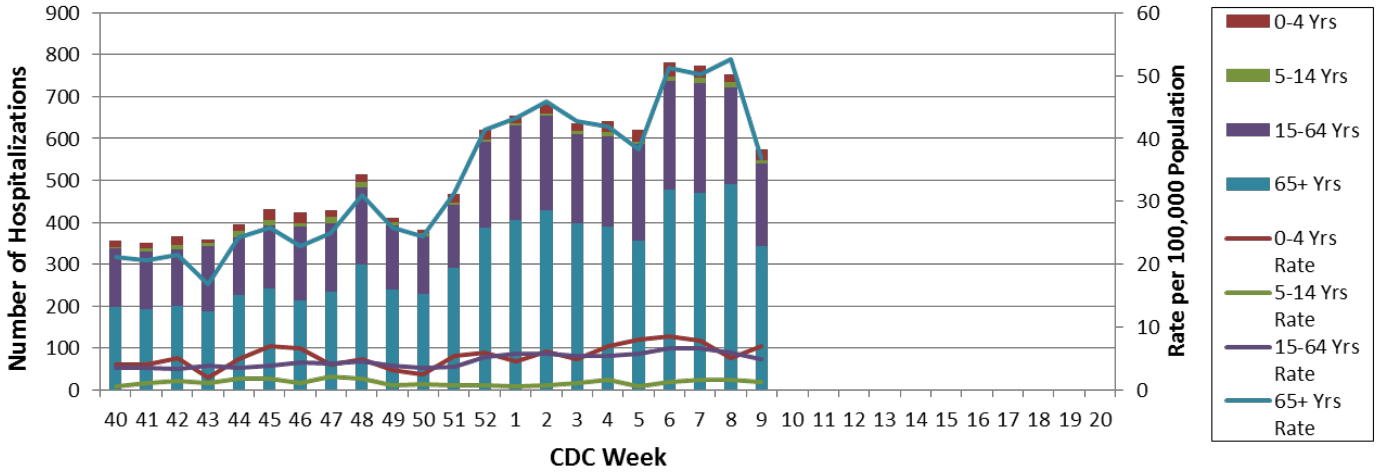
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*†



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Changes in ILI surveillance for the Northwest District were implemented on January 16, 2017.
†Not all data was available for the Northwest District during Week 6.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 9, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView):
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 10: March 5 – March 11, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Widespread[2].

- A season-to-date total of 57,280 laboratory-positive[3] influenza cases (41,325 influenza A, 14,890 influenza B, and 1,065 untyped) have been reported in Missouri as of Week 10. The influenza type for reported cases season-to-date includes 72% influenza A, 26% influenza B, and 2% untyped. The highest season-to-date rates of reported laboratory-positive influenza cases are among children aged 0-4 years (2,196 cases per 100,000 population) and 5-14 years (1,971 cases per 100,000). Eight laboratory-confirmed cases of influenza [seven influenza A (H3) and one influenza B (Yamagata)] were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 10.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized nine influenza isolates from Missouri, to date, this influenza season. Five viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus, three viruses were antigenically similar to the B/Brisbane/60/2008-like virus, and one virus was antigenically similar to the B/Phuket/3073/2013-like virus. An A/Hong Kong/4801/2014-like (H3N2) virus and a B/Brisbane/60/2008-like virus are included in the 2016-2017 Northern Hemisphere trivalent and quadrivalent vaccine formulations. A B/Phuket/3073/2013-like virus is included in the 2016-2017 Northern Hemisphere quadrivalent vaccine formulation.

- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 3.88% and 2.89% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories decreased during Week 10.

- Sixty-nine influenza-associated deaths have been reported in Missouri as of Week 10. During Week 9, 101 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 1,494 P&I associated deaths in Missouri.[5]

- Forty-two influenza or ILI-associated outbreaks have been reported in Missouri as of Week 10. Eleven influenza or ILI-associated school closures have been reported in Missouri as of Week 10.

- Influenza activity decreased but remained elevated in the U.S. during Week 9. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Widespread is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2mtynj7. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 10**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 10**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 10 (March 5 – March 11, 2017)*

Influenza Type	Week 8	Week 9	Week 10	2016-2017* Season-to-Date
Influenza A	4,447	2,869	1,266	41,325
Influenza B	2,919	2,349	1,566	14,890
Influenza Unknown Or Untyped	127	50	24	1,065
Total	7,493	5,268	2,856	57,280

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 10 (March 5 – March 11, 2017)*‡

Age Group	Week 10 Cases	Week 10 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	492	131	8,220	2,196
05-14	838	107	15,403	1,971
15-64	1,197	30	25,878	651
65+	329	35	7,777	834
Total	2,856	47	57,280	945

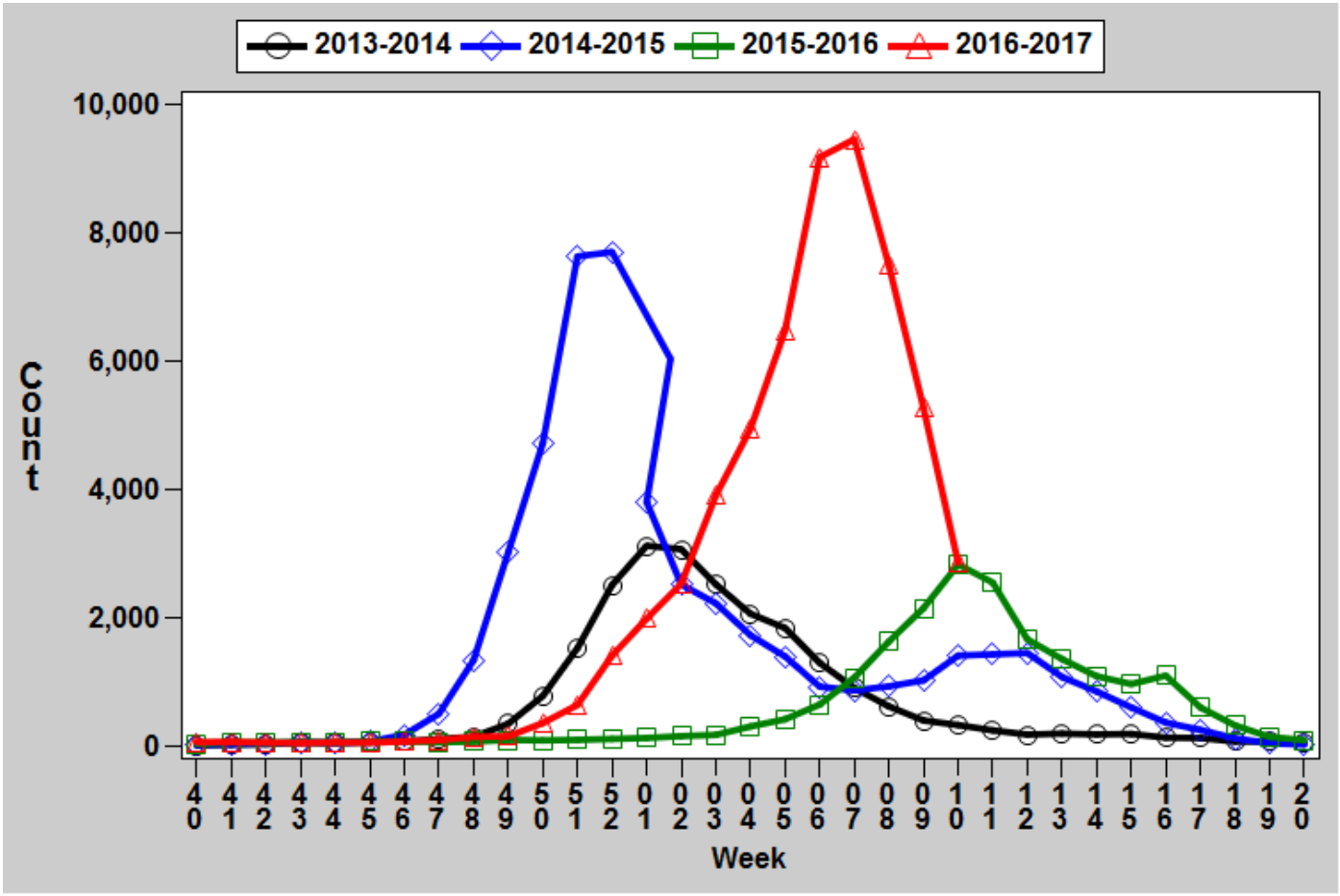
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 10 (March 5 – March 11, 2017)[*‡]

District	Week 10 Cases	Week 10 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	197	30	5,609	847
EA	1,243	55	17,538	777
NW	511	32	18,390	1,156
SE	440	92	7,609	1,598
SW	465	43	8,134	756
Total	2,856	47	57,280	945

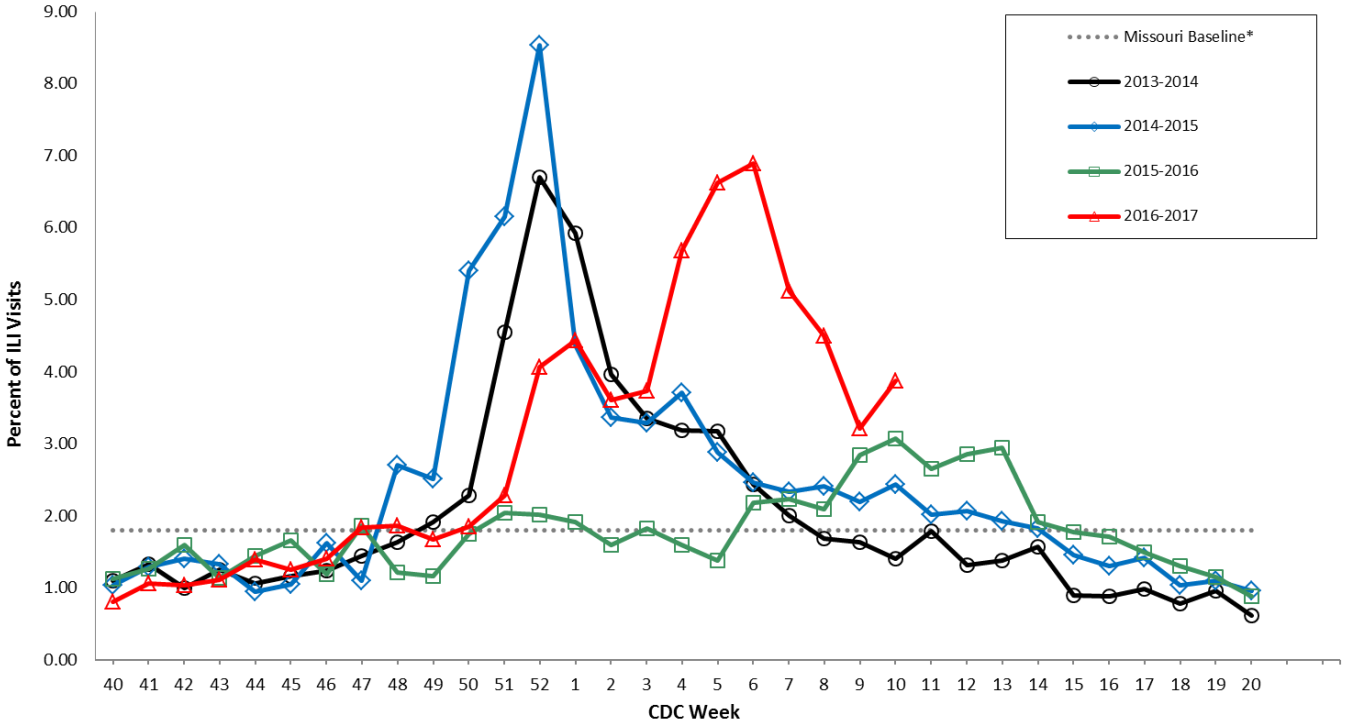
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017[*]



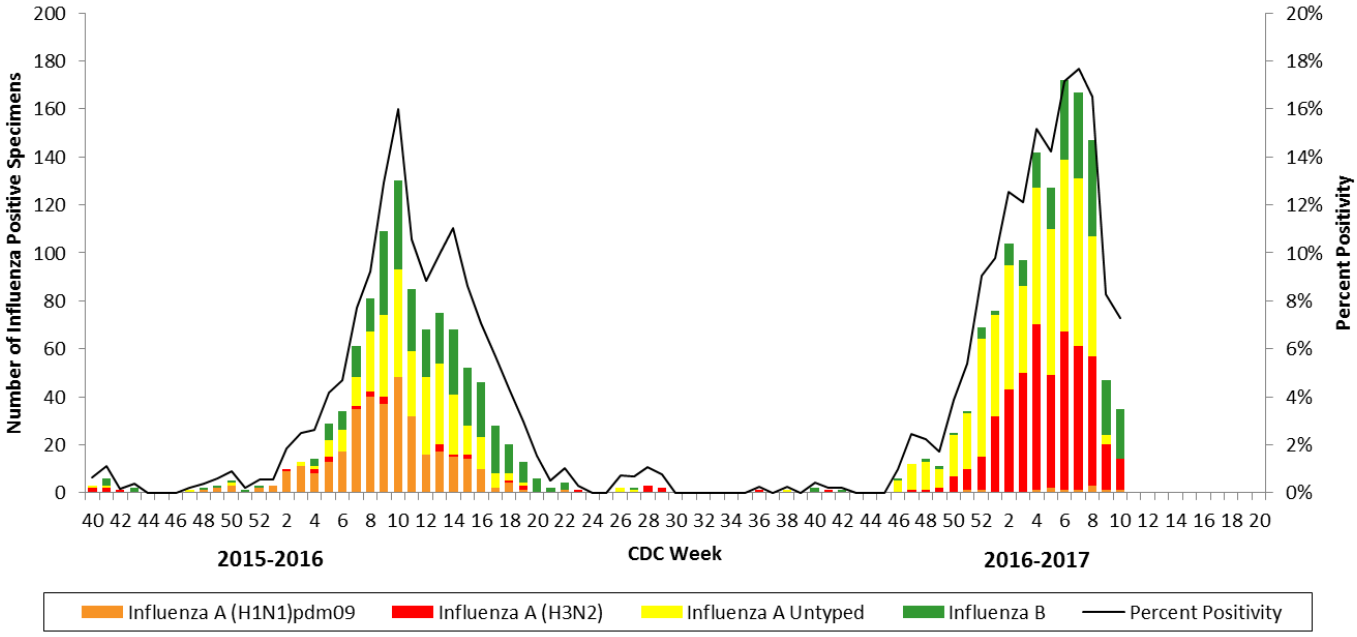
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



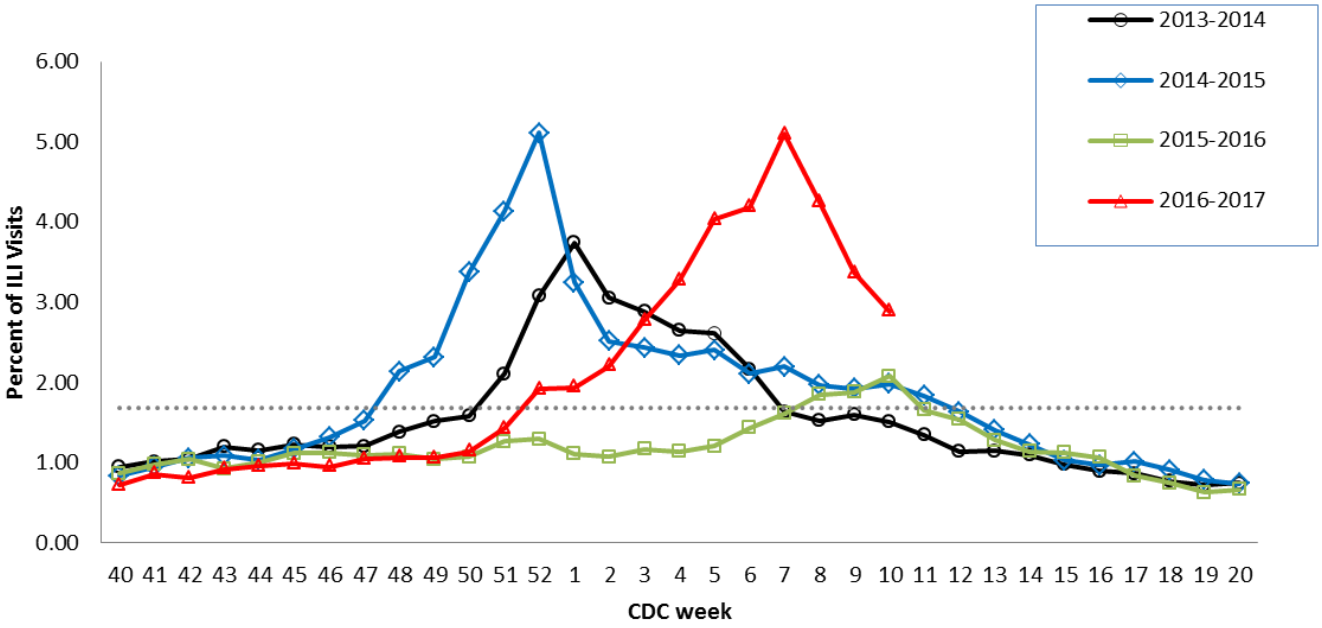
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†

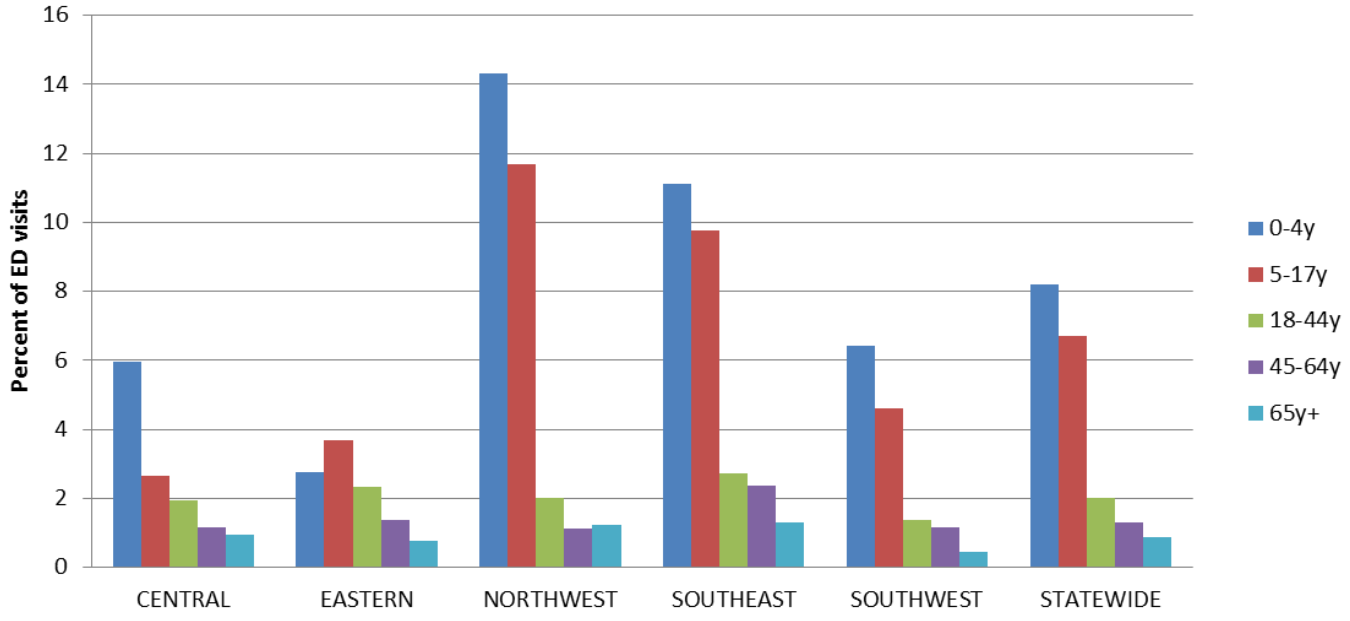


*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.

Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

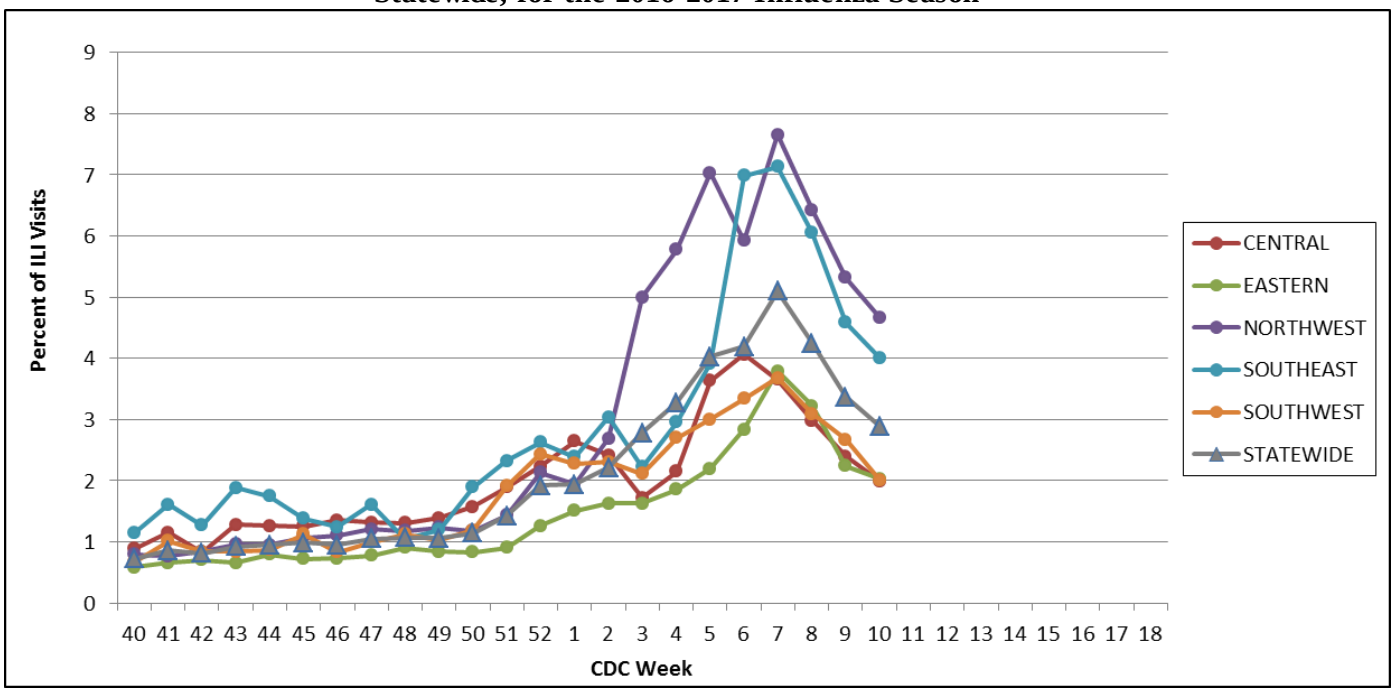
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 10, 2017



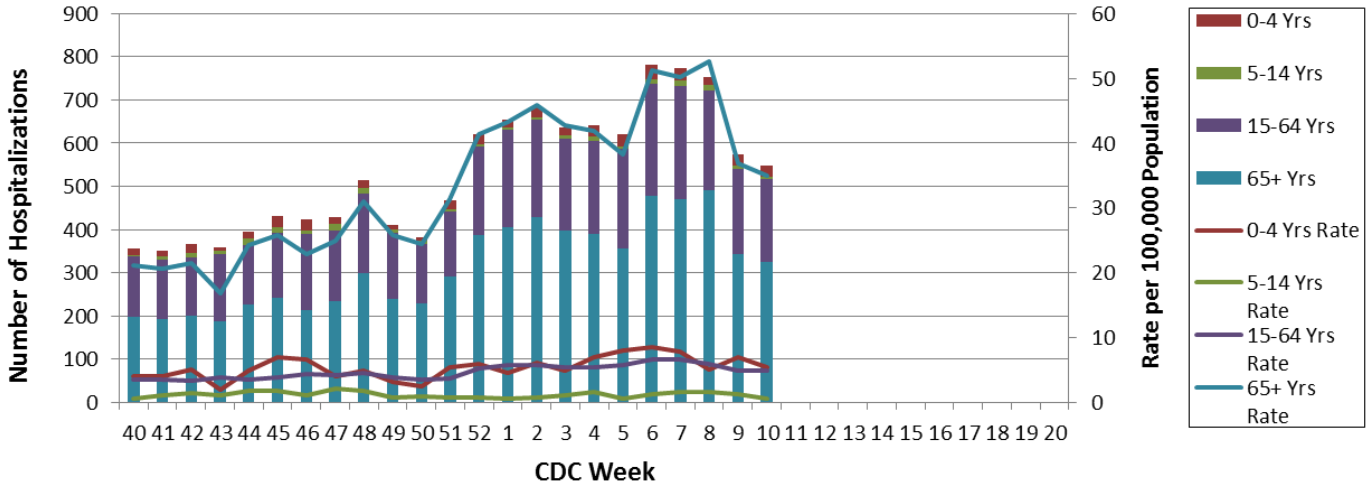
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*†



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Changes in ILI surveillance for the Northwest District were implemented on January 16, 2017.
†Not all data was available for the Northwest District during Week 6.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 10, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView):
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 11: March 12 – March 18, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Widespread[2].

- A season-to-date total of 59,662 laboratory-positive[3] influenza cases (42,238 influenza A, 16,324 influenza B, and 1,100 untyped) have been reported in Missouri as of Week 11. The influenza type for reported cases season-to-date includes 71% influenza A, 27% influenza B, and 2% untyped. The highest season-to-date rates of reported laboratory-positive influenza cases are among children aged 0-4 years (2,296 cases per 100,000 population) and 5-14 years (2,074 cases per 100,000). Six laboratory-confirmed cases of influenza A (H3) were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 11.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized nine influenza isolates from Missouri, to date, this influenza season. Five viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus, three viruses were antigenically similar to the B/Brisbane/60/2008-like virus, and one virus was antigenically similar to the B/Phuket/3073/2013-like virus. An A/Hong Kong/4801/2014-like (H3N2) virus and a B/Brisbane/60/2008-like virus are included in the 2016-2017 Northern Hemisphere trivalent and quadrivalent vaccine formulations. A B/Phuket/3073/2013-like virus is included in the 2016-2017 Northern Hemisphere quadrivalent vaccine formulation.

- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 2.82% and 2.87% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories remained elevated during Week 11.

- Seventy-eight influenza-associated deaths have been reported in Missouri as of Week 11. During Week 10, 79 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 1,573 P&I associated deaths in Missouri.[5]

- Forty-two influenza or ILI-associated outbreaks have been reported in Missouri as of Week 11. Eleven influenza or ILI-associated school closures have been reported in Missouri as of Week 11.

- Influenza activity decreased but remained elevated in the U.S. during Week 10. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Widespread is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2nJNiK5. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 11**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 11**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 11 (March 12 – March 18, 2017)*

Influenza Type	Week 9	Week 10	Week 11	2016-2017* Season-to-Date
Influenza A	2,877	1,487	677	42,238
Influenza B	2,361	1,861	1,127	16,324
Influenza Unknown Or Untyped	50	49	9	1,100
Total	5,288	3,397	1,813	59,662

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 11 (March 12 – March 18, 2017)*‡

Age Group	Week 11 Cases	Week 11 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	261	70	8,594	2,296
05-14	636	81	16,208	2,074
15-64	727	18	26,836	675
65+	189	20	8,022	861
Total	1,813	30	59,662	984

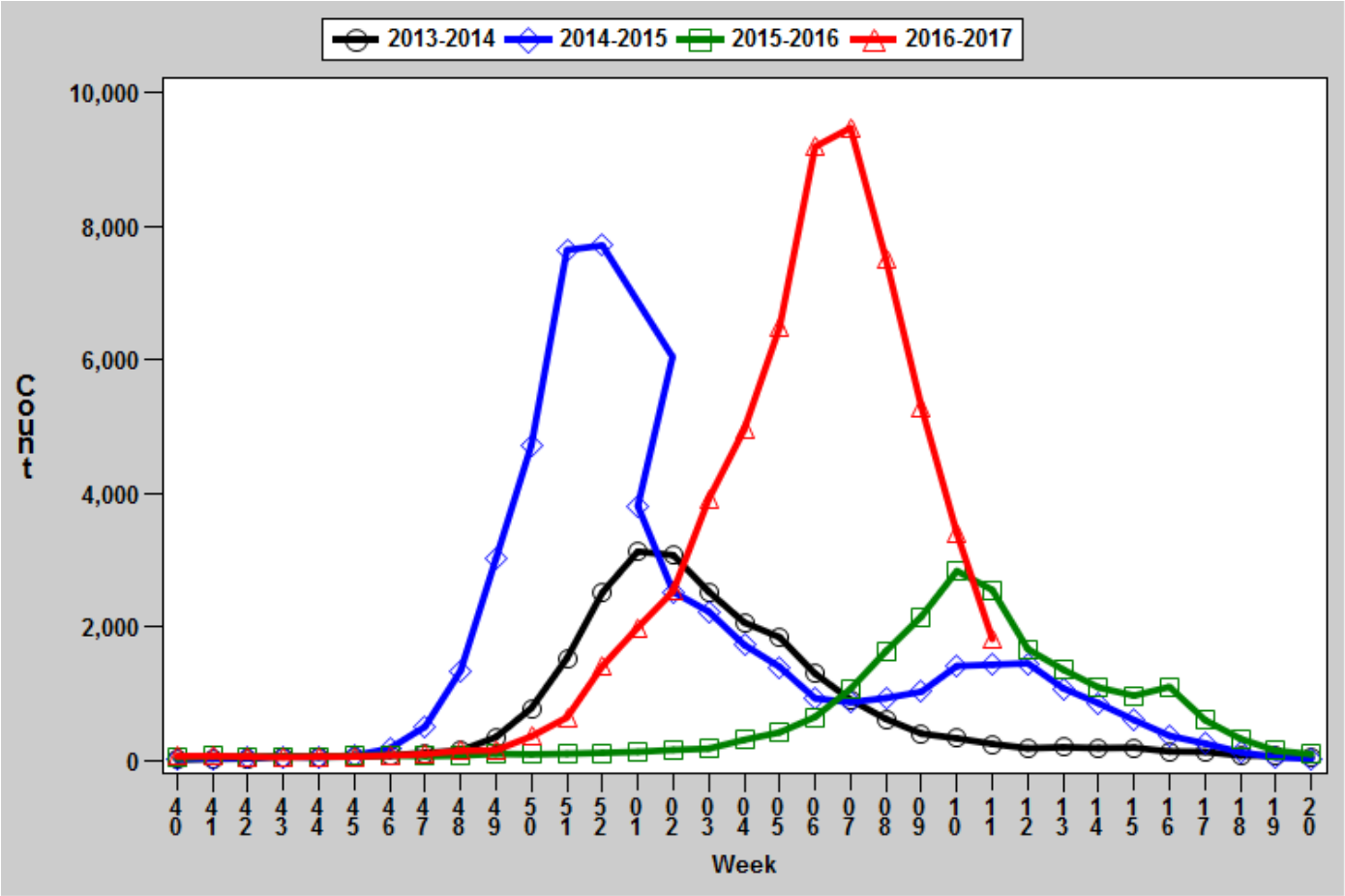
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive† Influenza Cases and Case Rates by Region, Missouri, CDC Week 11 (March 12 – March 18, 2017)*‡

District	Week 11 Cases	Week 11 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
CE	139	21	5,781	873
EA	807	36	18,348	813
NW	407	26	19,172	1,205
SE	225	47	7,953	1,671
SW	235	22	8,408	781
Total	1,813	30	59,662	984

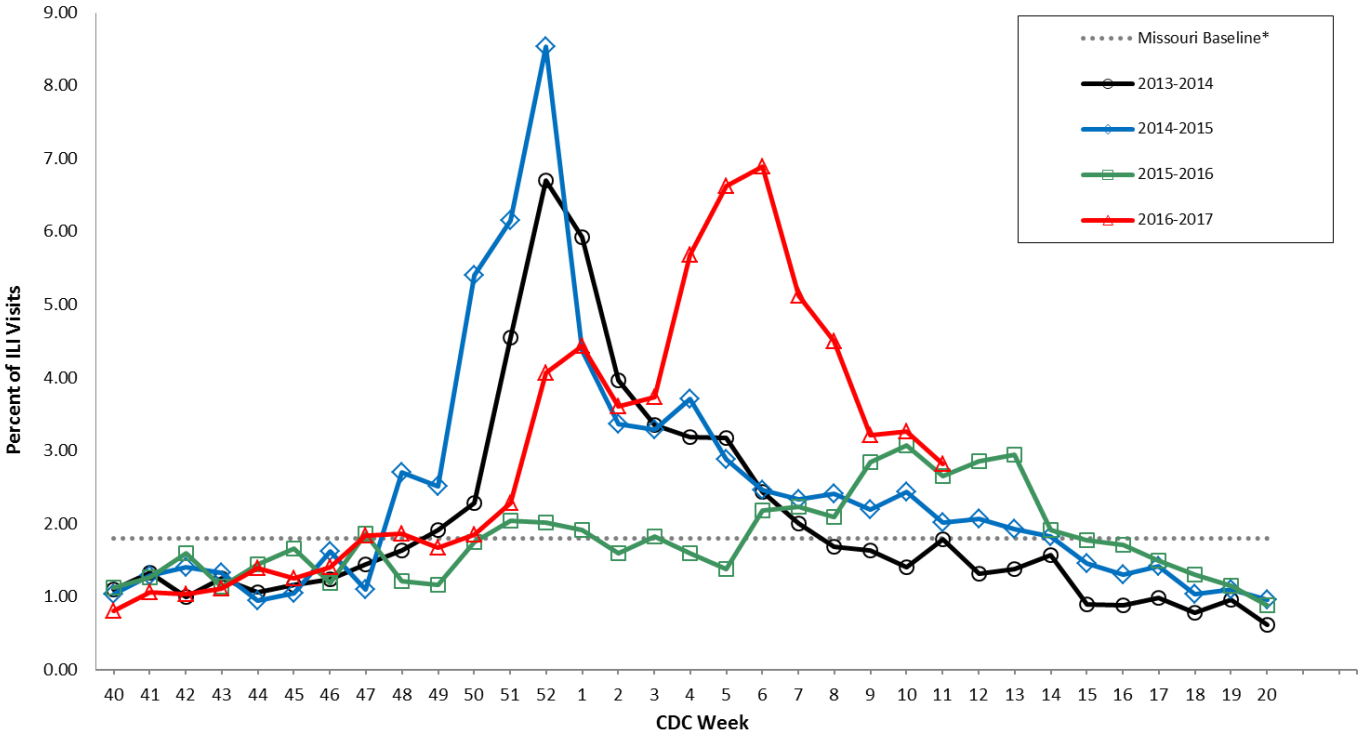
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive† Influenza Cases by CDC Week, Missouri, 2013-2017*



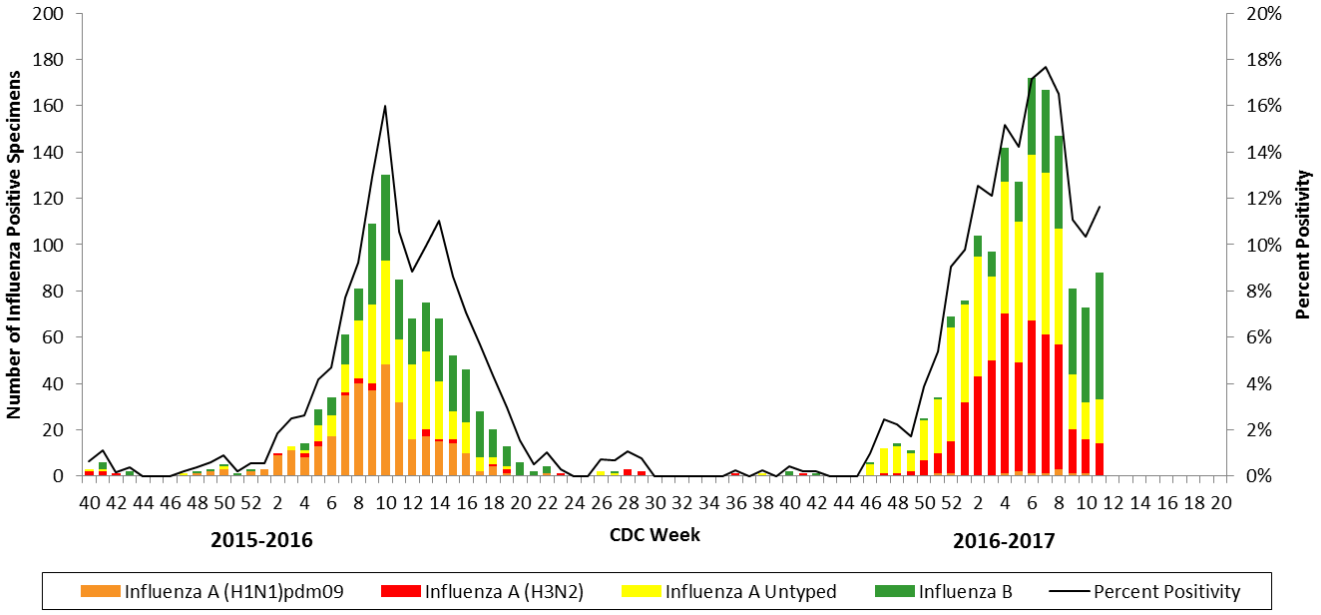
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



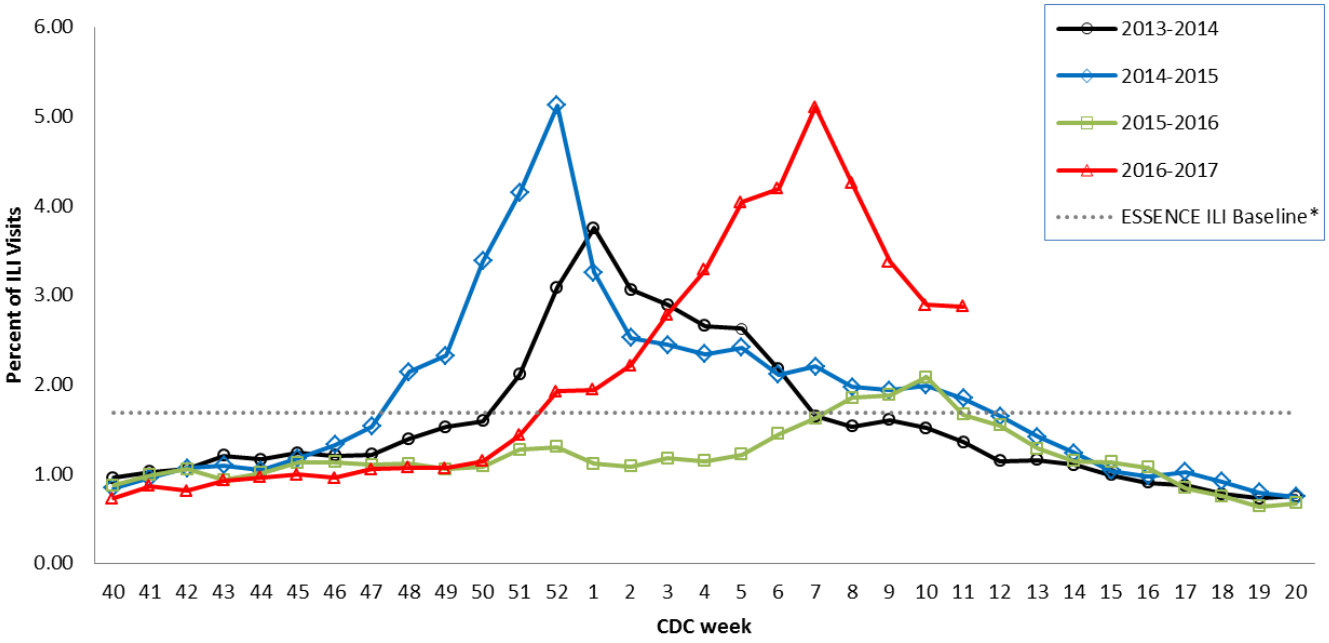
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

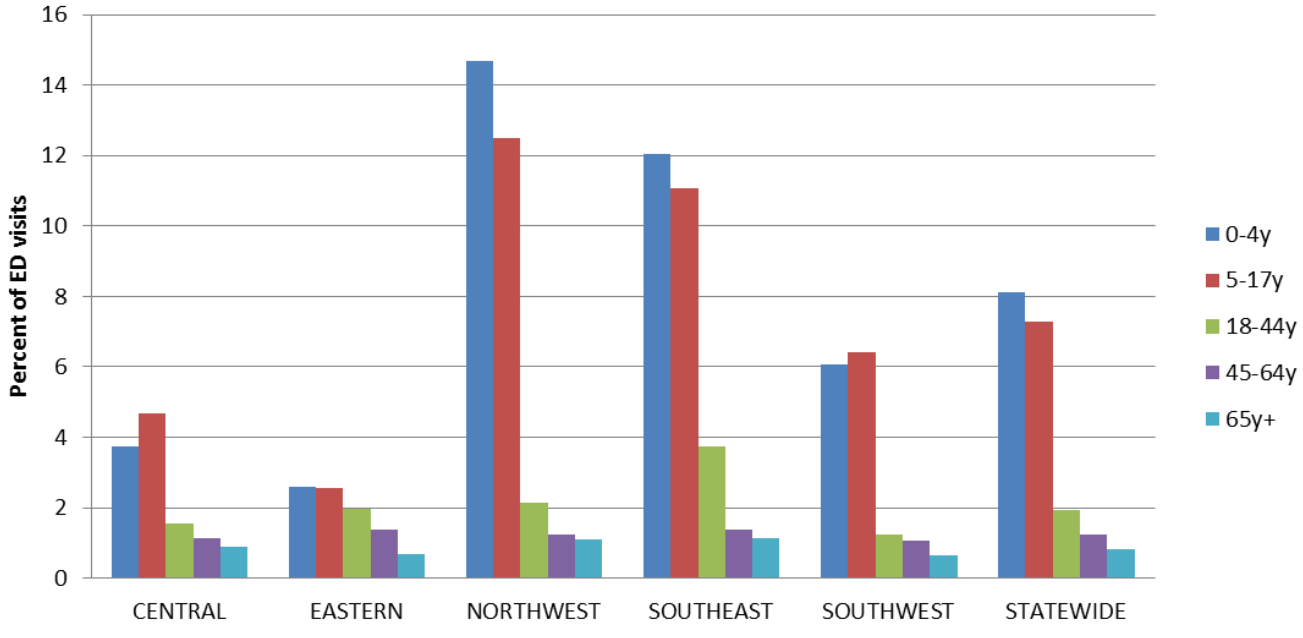
Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†



*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

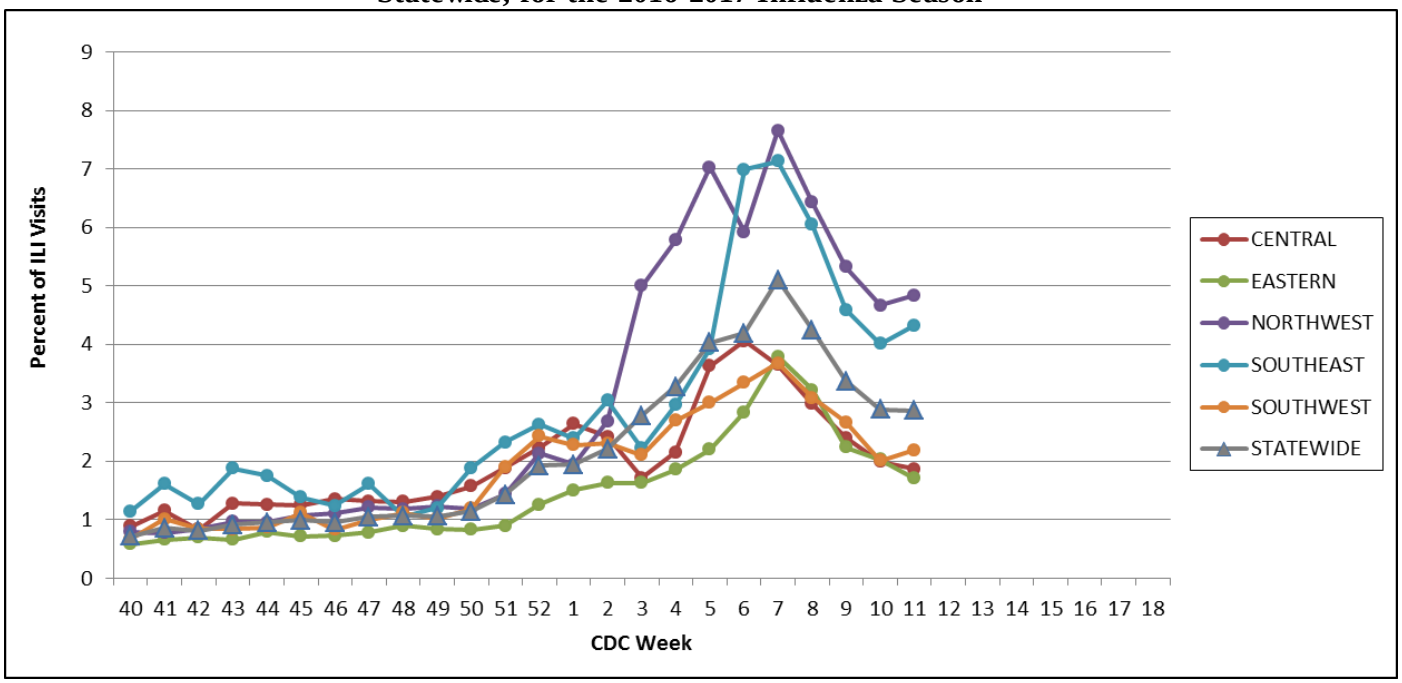
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 11, 2017



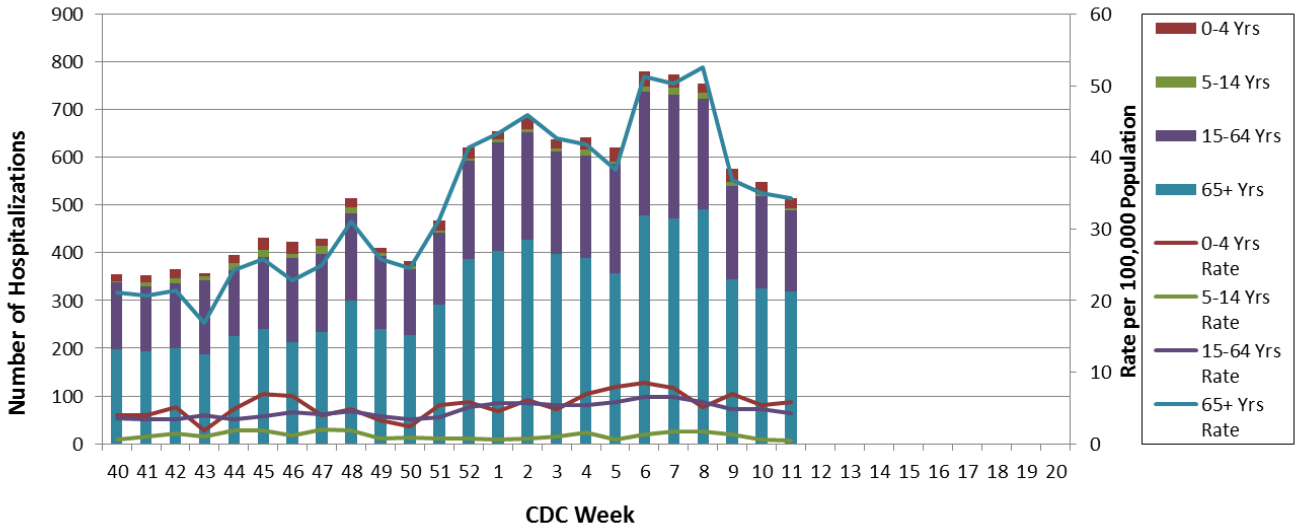
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*†



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Changes in ILI surveillance for the Northwest District were implemented on January 16, 2017.
†Not all data was available for the Northwest District during Week 6.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 11, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView):
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 12: March 19 – March 25, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Widespread[2].

- A season-to-date total of 63,312 laboratory-positive[3] influenza cases (43,548 influenza A, 18,600 influenza B, and 1,164 untyped) have been reported in Missouri as of Week 12. The influenza type for reported cases season-to-date includes 69% influenza A, 29% influenza B, and 2% untyped. The highest season-to-date rates of reported laboratory-positive influenza cases are among children aged 0-4 years (2,452 cases per 100,000 population) and 5-14 years (2,210 cases per 100,000). No laboratory-confirmed cases of influenza were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 12.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized thirteen influenza isolates from Missouri, to date, this influenza season. Eight viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus, three viruses were antigenically similar to the B/Brisbane/60/2008-like virus, one virus was antigenically similar to the B/Phuket/3073/2013-like virus, and one virus was antigenically similar to the A/California/07/2009-like (H1N1)pdm09 virus. An A/Hong Kong/4801/2014-like (H3N2) virus, a B/Brisbane/60/2008-like virus, and an A/California/07/2009-like (H1N1)pdm09 virus are included in the 2016-2017 Northern Hemisphere trivalent and quadrivalent vaccine formulations. A B/Phuket/3073/2013-like virus is included in the 2016-2017 Northern Hemisphere quadrivalent vaccine formulation.

- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 2.44% and 2.75% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories remained elevated during Week 12.

- Eighty-four influenza-associated deaths have been reported in Missouri as of Week 12. During Week 11, 84 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 1,657 P&I associated deaths in Missouri.[5]

- Forty-five influenza or ILI-associated outbreaks have been reported in Missouri as of Week 12. Eleven influenza or ILI-associated school closures have been reported in Missouri as of Week 12.

- Influenza activity decreased but remained elevated in the U.S. during Week 11. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Widespread is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2nk0MZh. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 12**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 12**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 12 (March 19 – March 25, 2017)*

Influenza Type	Week 10	Week 11	Week 12	2016-2017* Season-to-Date
Influenza A	1,569	1,109	566	43,548
Influenza B	1,996	1,880	1,241	18,600
Influenza Unknown Or Untyped	67	30	12	1,164
Total	3,632	3,019	1,819	63,312

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 12 (March 19 – March 25, 2017)*‡

Age Group	Week 12 Cases	Week 12 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	299	80	9,178	2,452
05-14	553	71	17,270	2,210
15-64	766	19	28,428	715
65+	201	22	8,434	905
Total	1,819	30	63,312	1,044

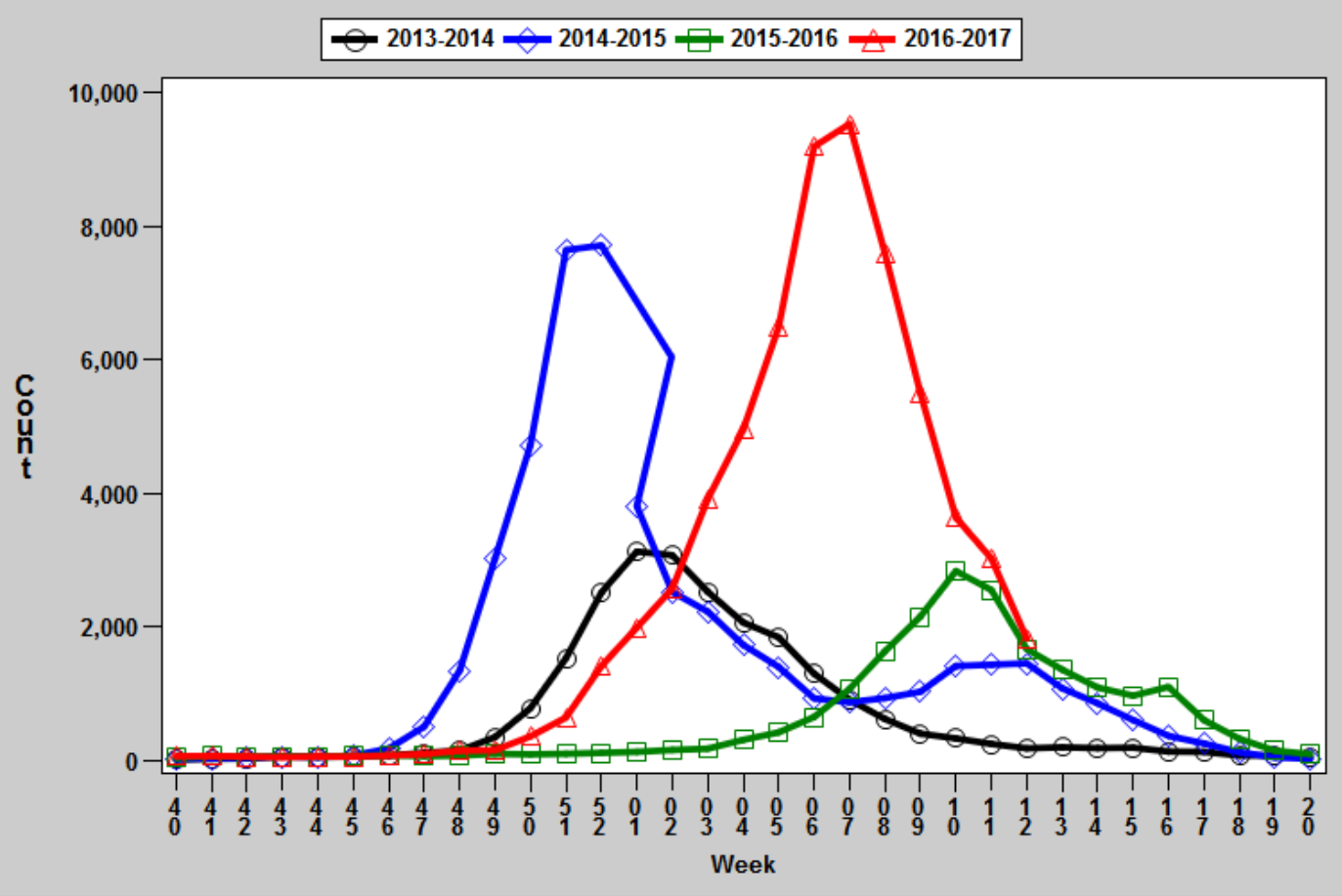
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 12 (March 19 – March 25, 2017)[*‡]

District	Week 12 Cases	Week 12 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	161	24	6,124	924
EA	896	40	19,391	859
NW	370	23	20,472	1,287
SE	232	49	8,646	1,816
SW	160	15	8,679	807
Total	1,819	30	63,312	1,044

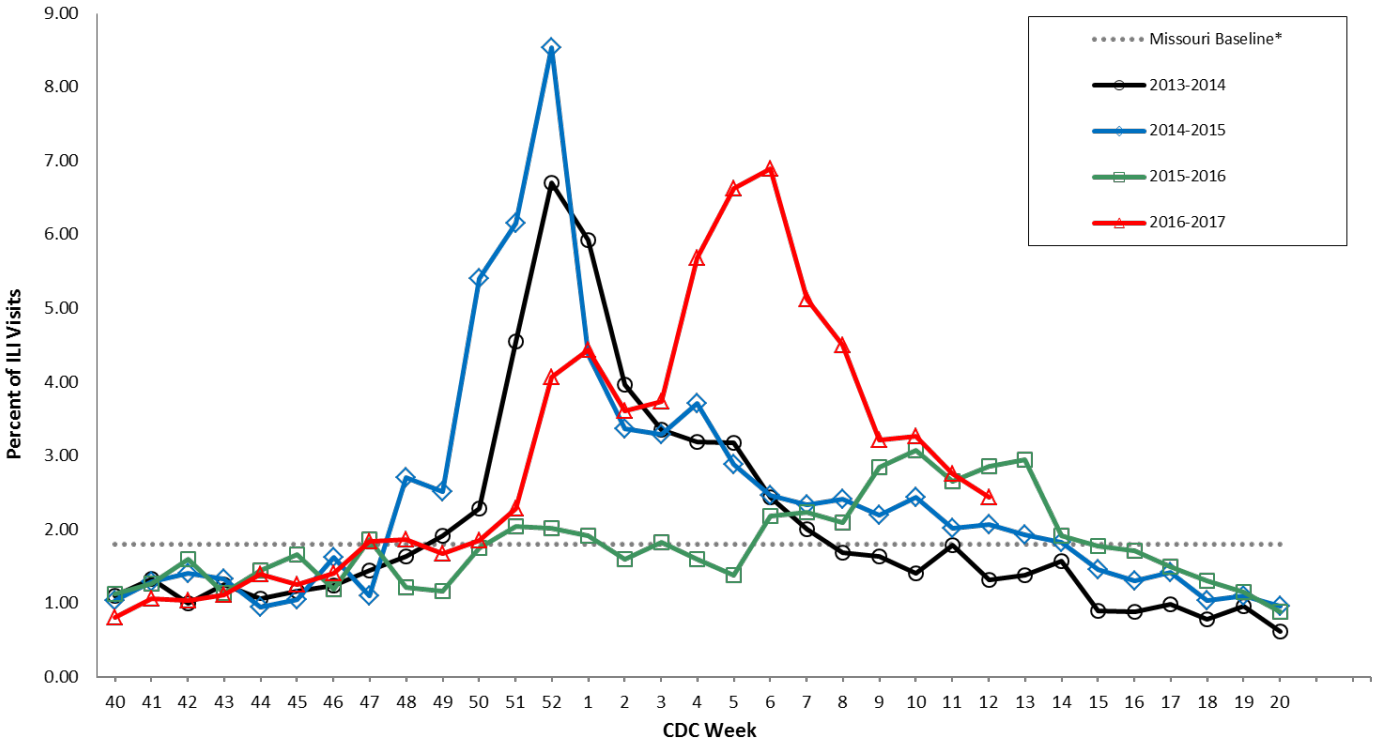
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017[*]



[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

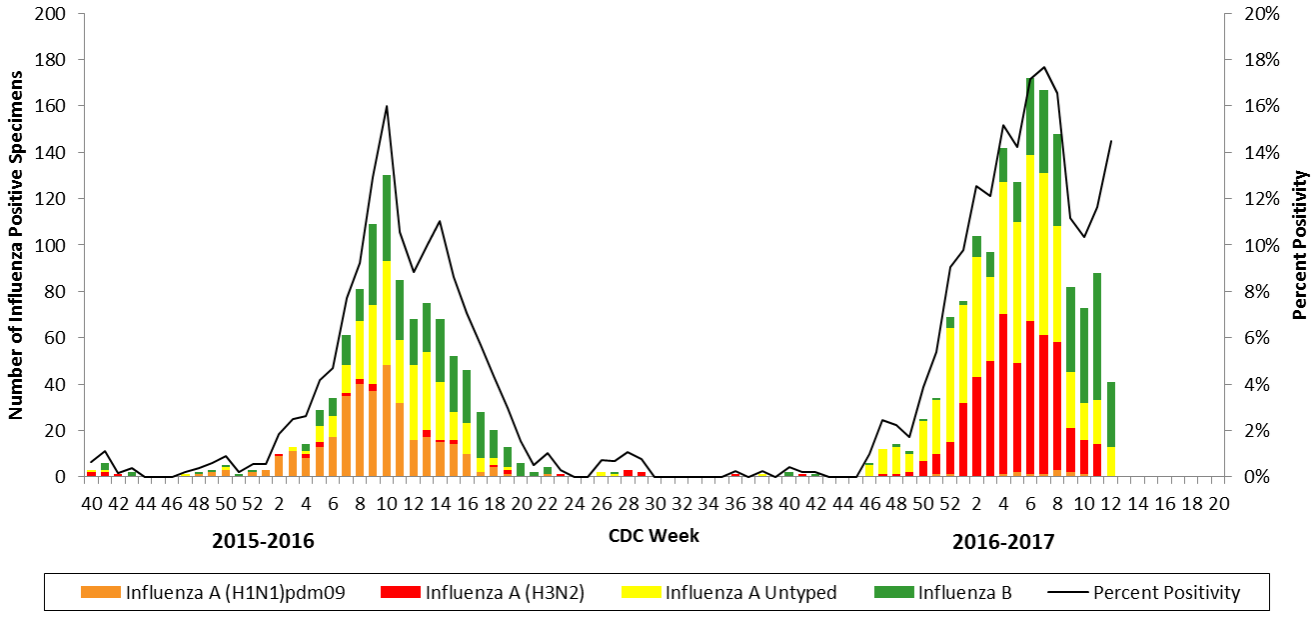
Figure 5. Percentage of Outpatient Visits for Influenza-like Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).

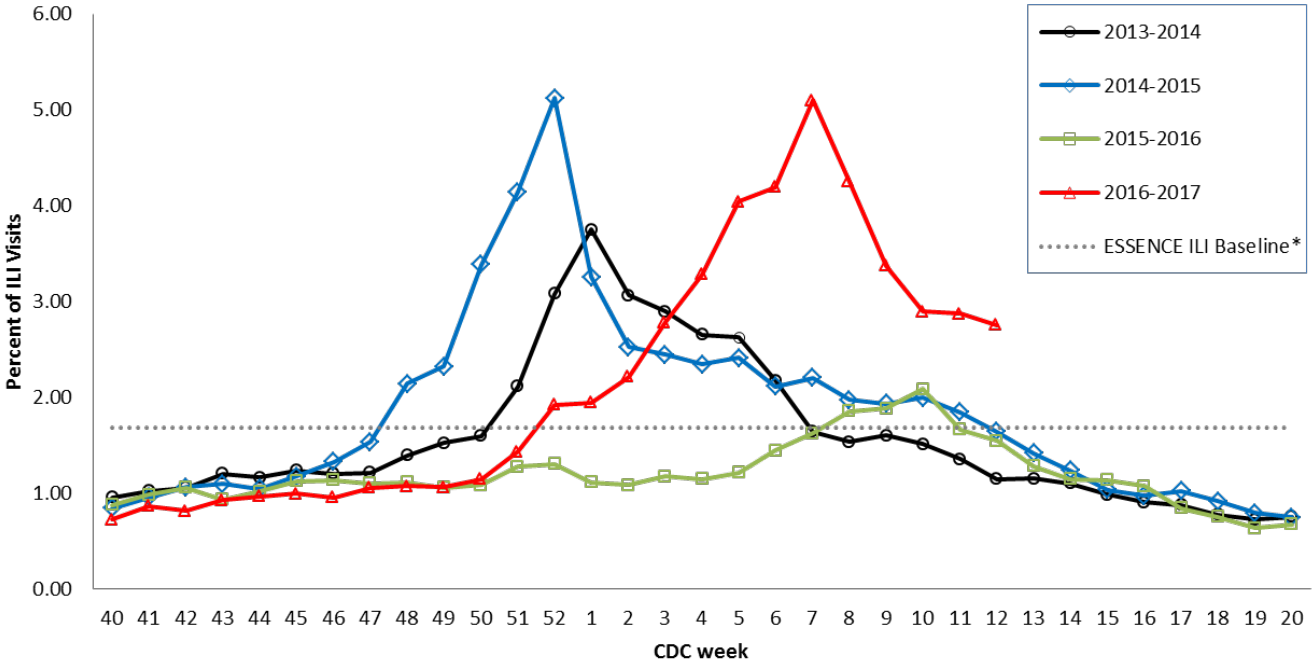
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

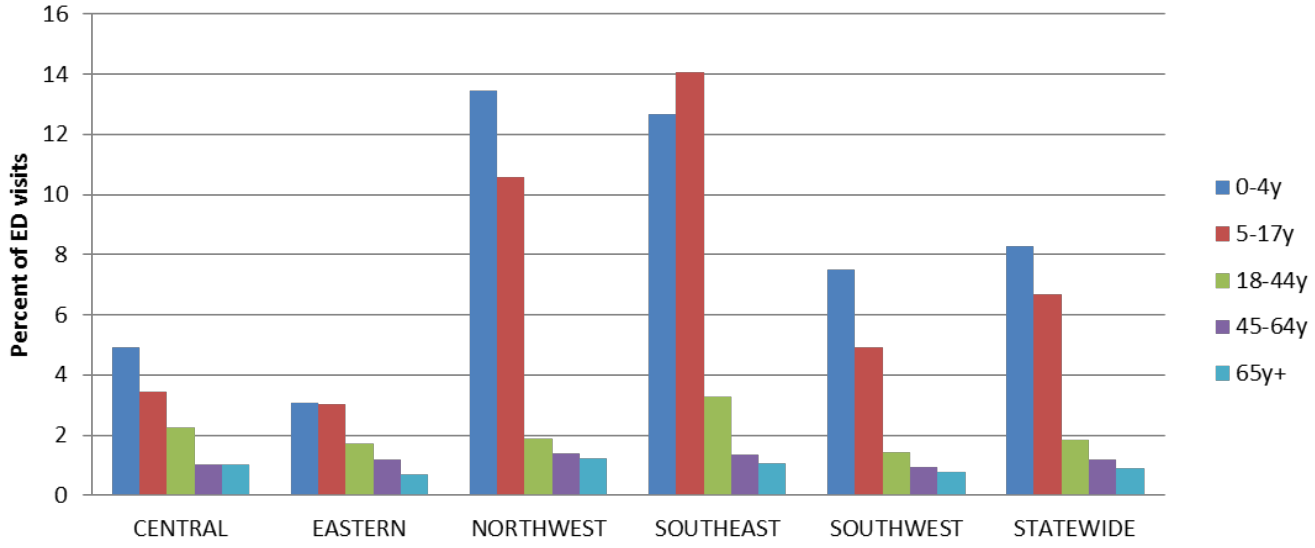
Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†



*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

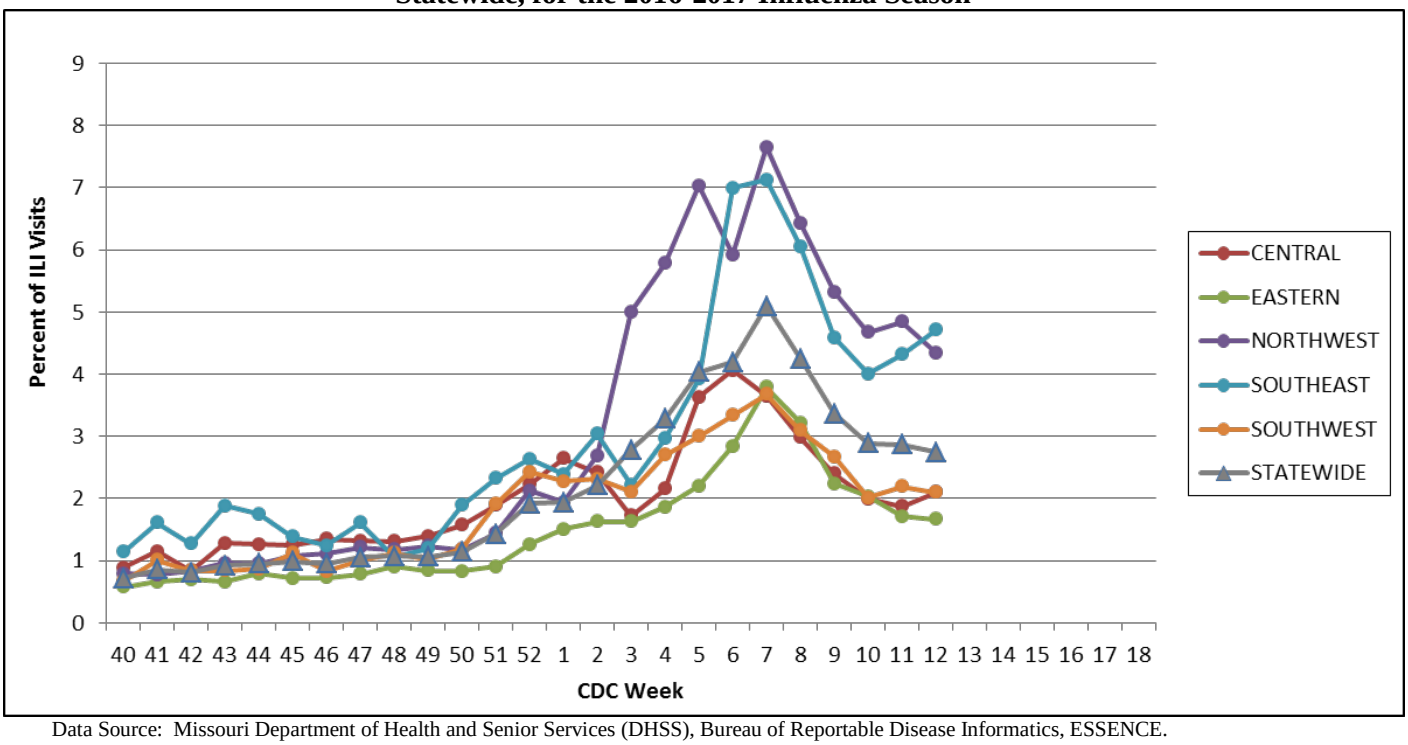
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 12, 2017



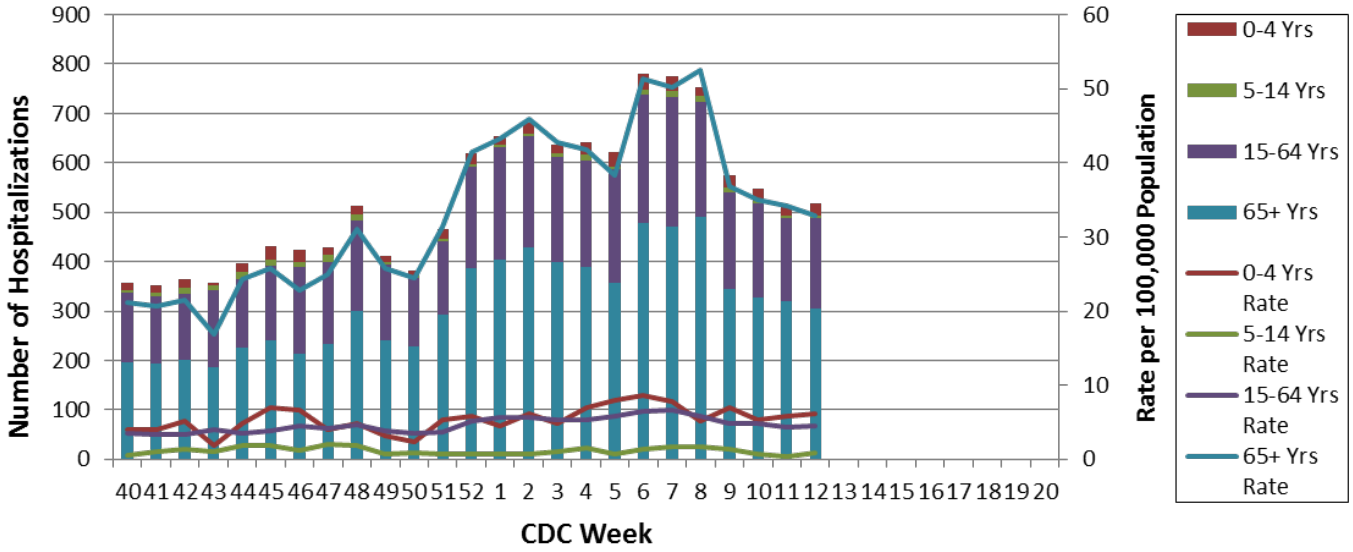
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*†



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Changes in ILI surveillance for the Northwest District were implemented on January 16, 2017.
†Not all data was available for the Northwest District during Week 6.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 12, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView):
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 13: March 26 – April 1, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Widespread[2].

- A season-to-date total of 66,850 laboratory-positive[3] influenza cases (44,510 influenza A, 21,155 influenza B, and 1,185 untyped) have been reported in Missouri as of Week 13. The influenza type for reported cases season-to-date includes 66% influenza A, 32% influenza B, and 2% untyped. The highest season-to-date rates of reported laboratory-positive influenza cases are among children aged 0-4 years (2,599 cases per 100,000 population) and 5-14 years (2,360 cases per 100,000). Three laboratory-confirmed cases of influenza A (H3) were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 13.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized 15 influenza isolates from Missouri, to date, this influenza season. Eight viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus, four viruses were antigenically similar to the B/Brisbane/60/2008-like virus, two viruses were antigenically similar to the B/Phuket/3073/2013-like virus, and one virus was antigenically similar to the A/California/07/2009-like (H1N1)pdm09 virus. An A/Hong Kong/4801/2014-like (H3N2) virus, a B/Brisbane/60/2008-like virus, and an A/California/07/2009-like (H1N1)pdm09 virus are included in the 2016-2017 Northern Hemisphere trivalent and quadrivalent vaccine formulations. A B/Phuket/3073/2013-like virus is included in the 2016-2017 Northern Hemisphere quadrivalent vaccine formulation.

- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 2.76% and 2.18% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories decreased during Week 13.

- Ninety-one influenza-associated deaths have been reported in Missouri as of Week 13. During Week 12, 92 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 1,749 P&I associated deaths in Missouri.[5]

- Forty-five influenza or ILI-associated outbreaks have been reported in Missouri as of Week 13. Eleven influenza or ILI-associated school closures have been reported in Missouri as of Week 13.

- Influenza activity remained elevated in the U.S. during Week 12. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Widespread is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2o4znNI. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 13**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 13**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 13 (March 26 – April 1, 2017)*

Influenza Type	Week 11	Week 12	Week 13	2016-2017* Season-to-Date
Influenza A	1,233	823	482	44,510
Influenza B	2,137	1,918	1,457	21,155
Influenza Unknown Or Untyped	34	20	9	1,185
Total	3,404	2,761	1,948	66,850

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 13 (March 26 – April 1, 2017)*‡

Age Group	Week 13 Cases	Week 13 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	322	86	9,729	2,599
05-14	645	83	18,442	2,360
15-64	786	20	29,902	752
65+	195	21	8,775	941
Total	1,948	32	66,850	1,102

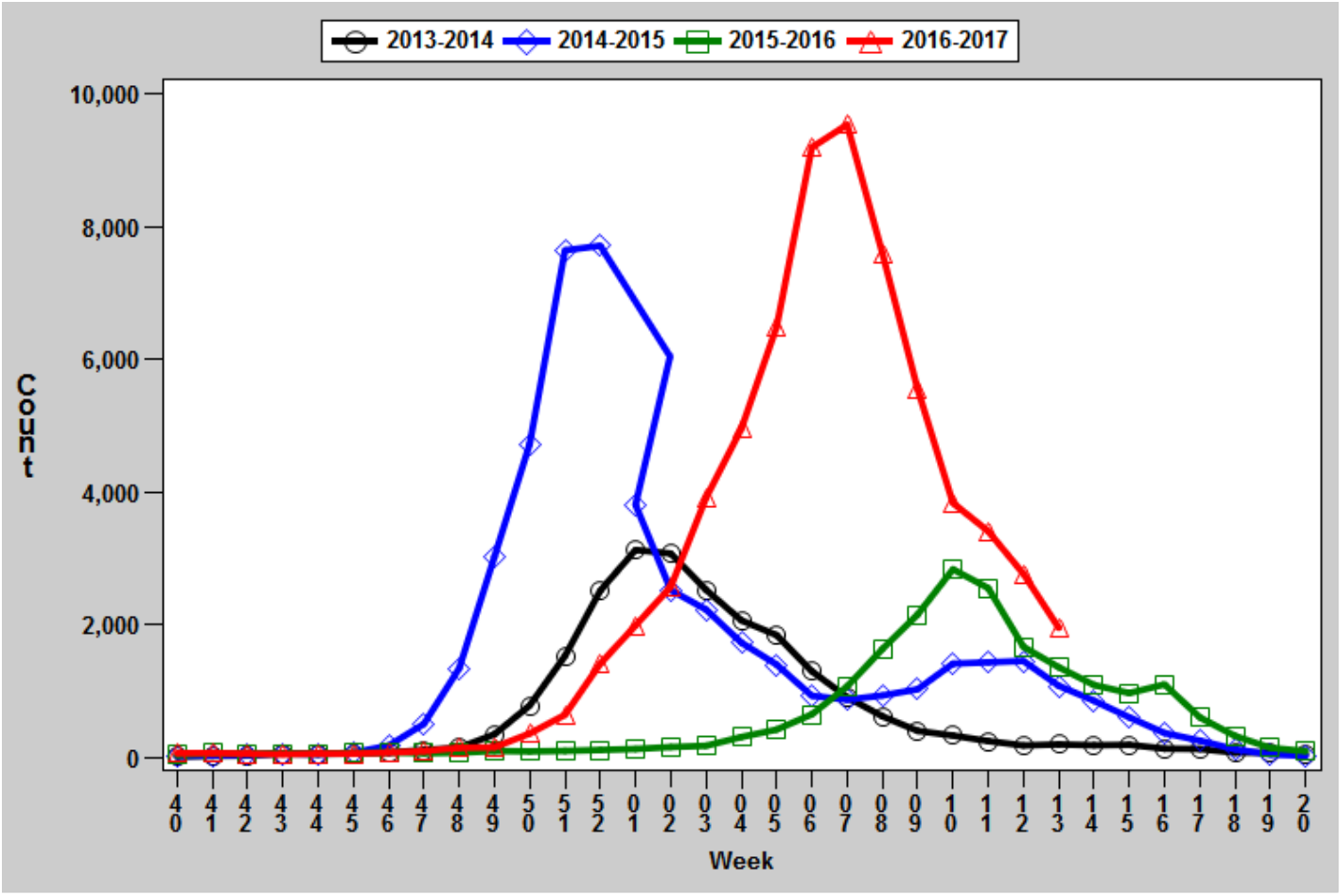
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 13 (March 26 – April 1, 2017)[*‡]

District	Week 13 Cases	Week 13 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	83	13	6,280	948
EA	867	38	20,876	925
NW	317	20	21,074	1,324
SE	402	84	9,330	1,960
SW	279	26	9,290	863
Total	1,948	32	66,850	1,102

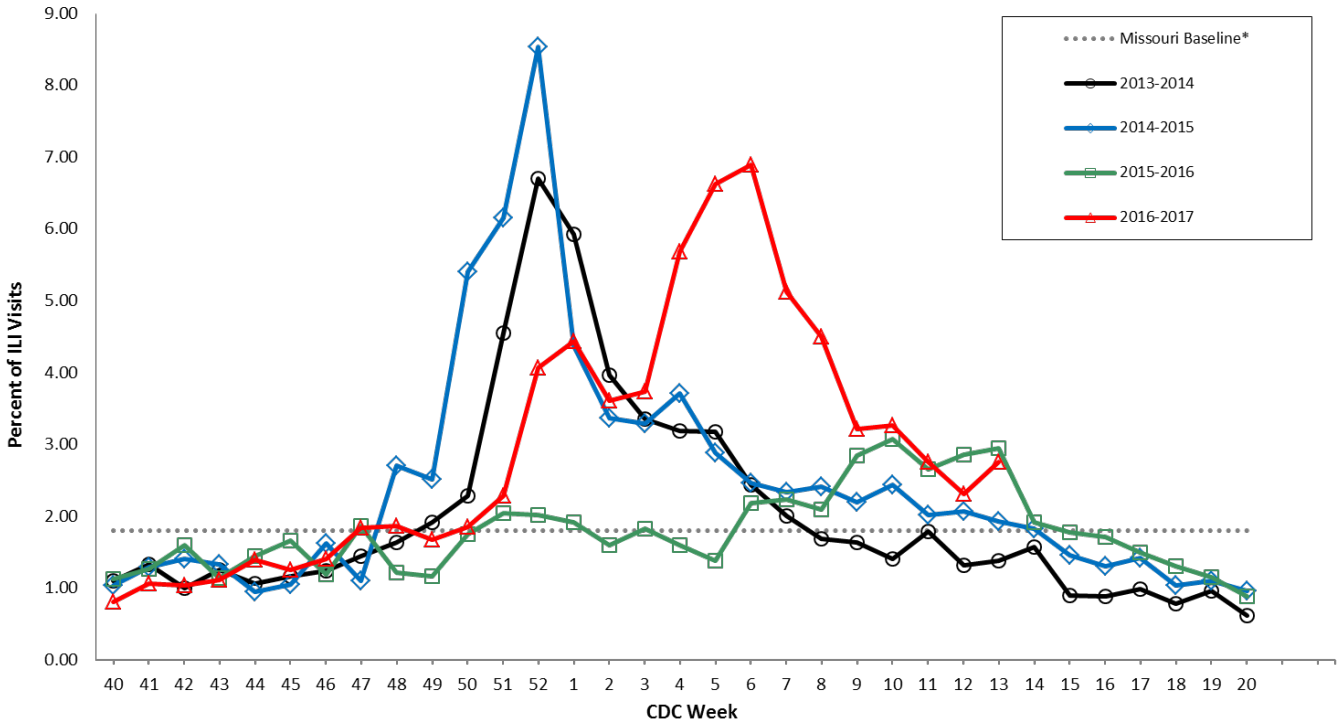
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017[*]



[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

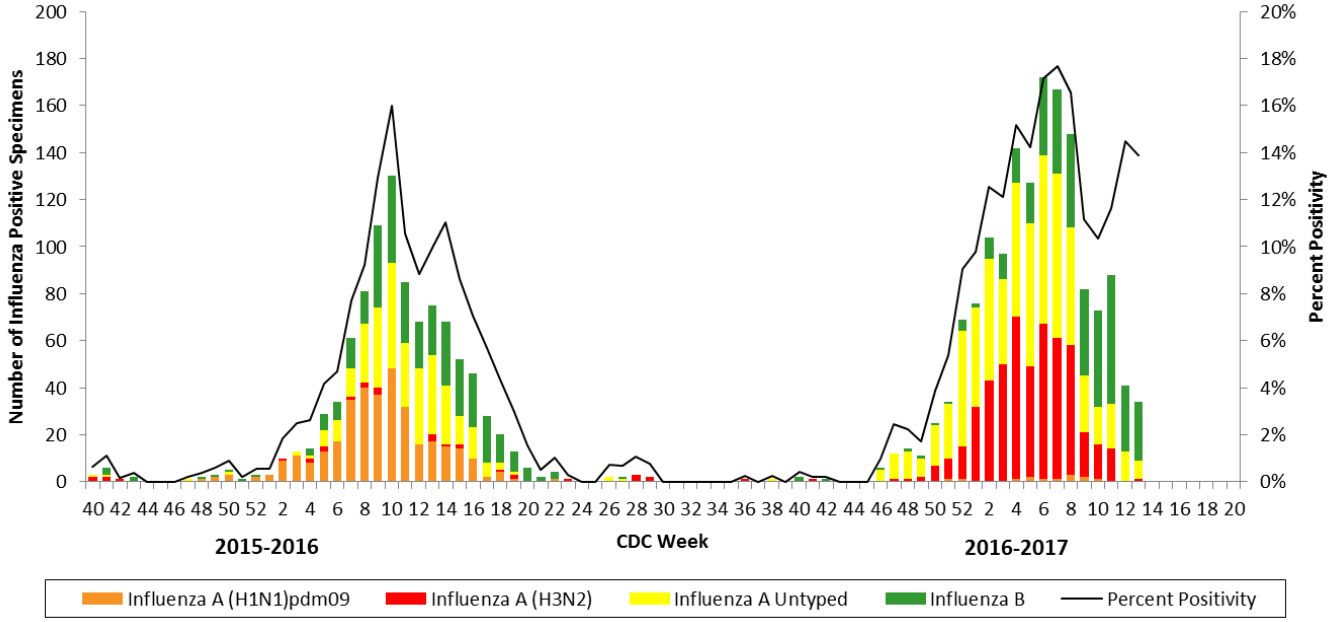
Figure 5. Percentage of Outpatient Visits for Influenza-like Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).

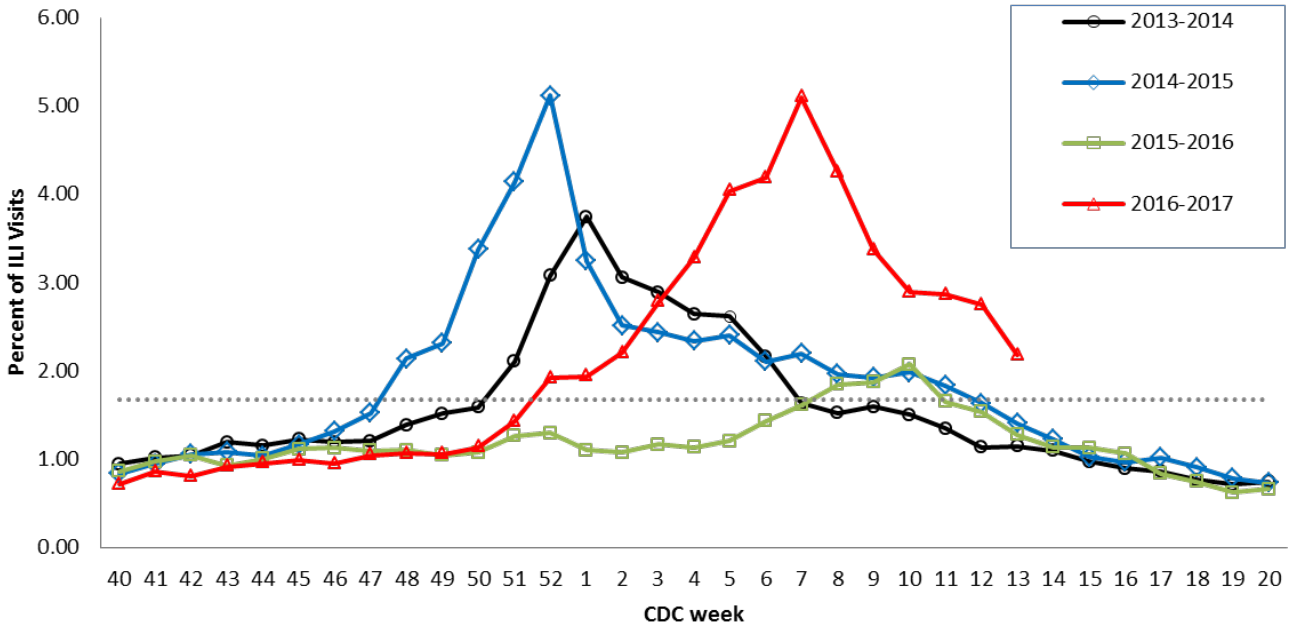
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

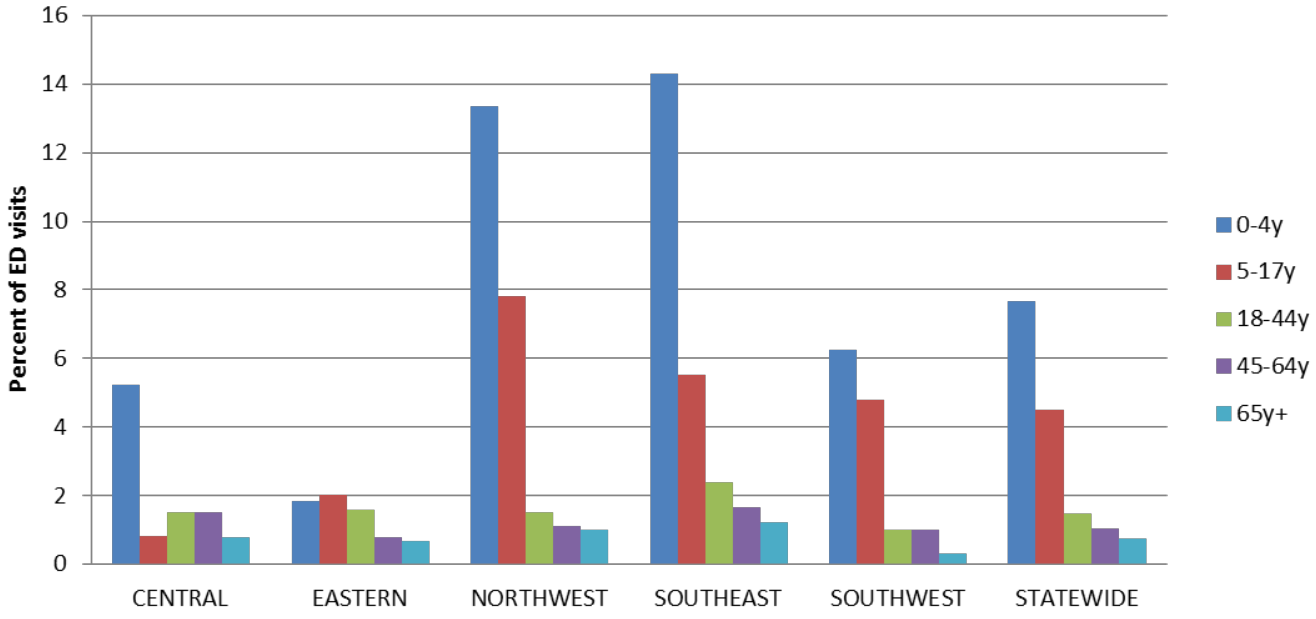
Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†



*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

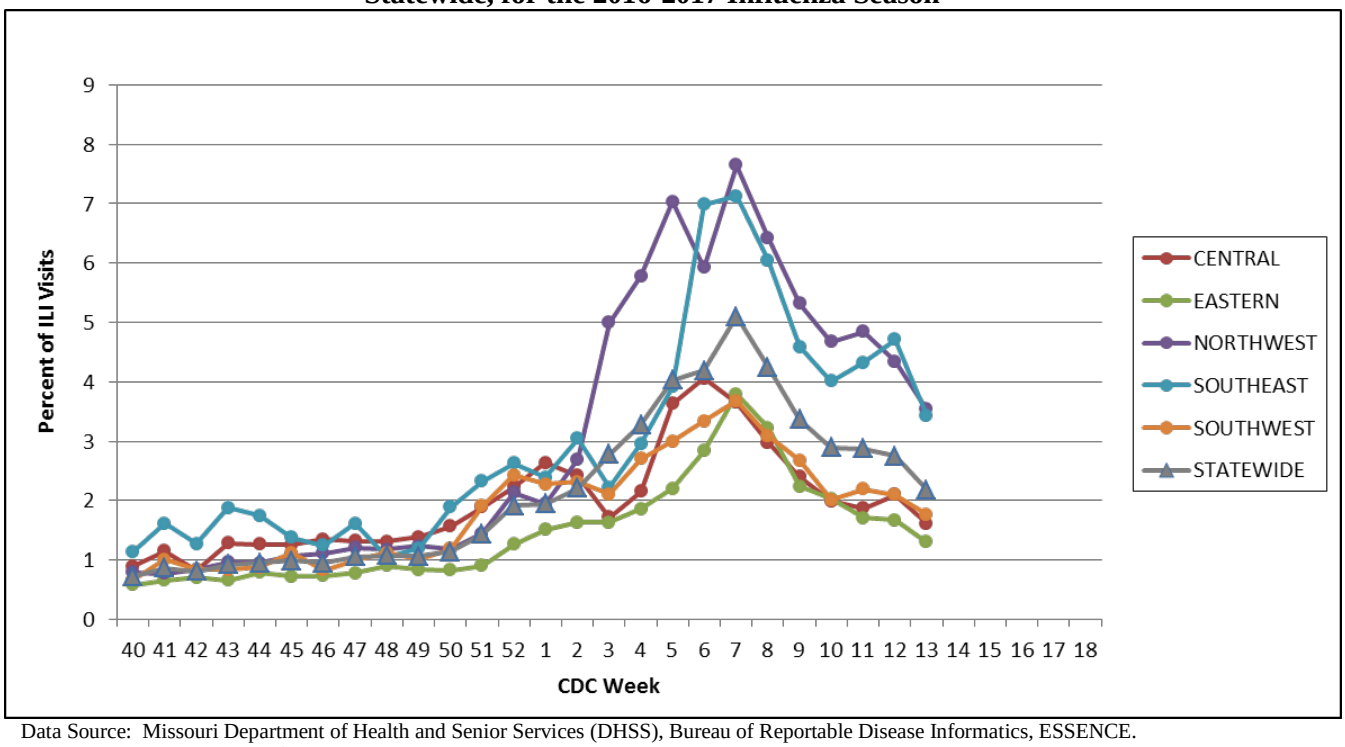
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 13, 2017



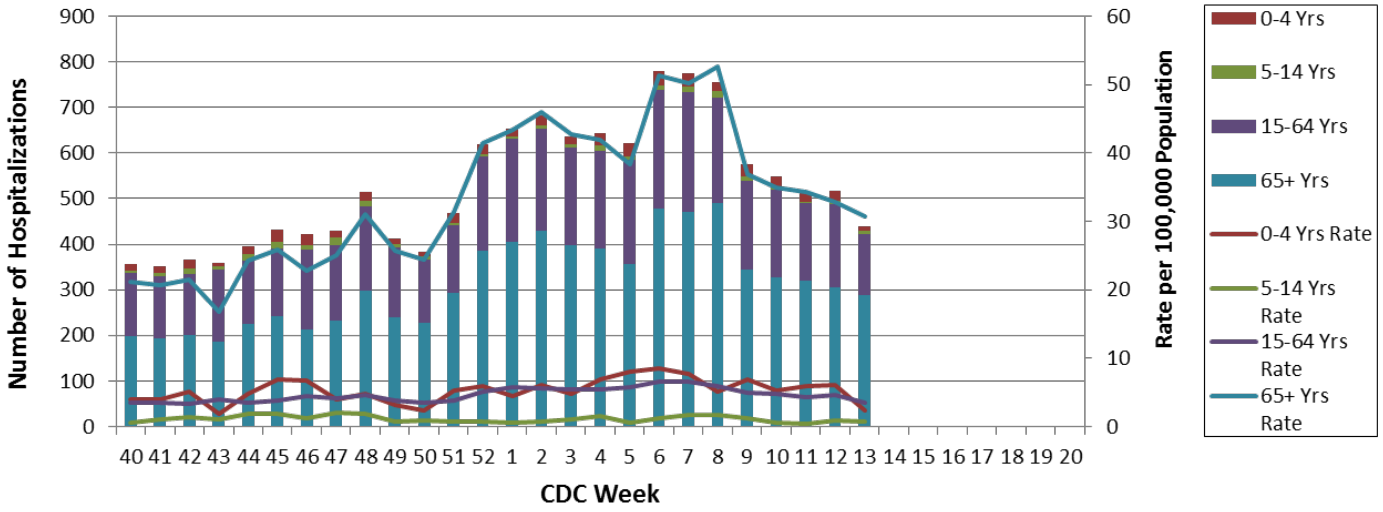
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*†



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Changes in ILI surveillance for the Northwest District were implemented on January 16, 2017.
†Not all data was available for the Northwest District during Week 6.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 13, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView):
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 14: April 2 – April 8, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri decreased to Regional[2].

- A season-to-date total of 68,792 laboratory-positive[3] influenza cases (45,094 influenza A, 22,474 influenza B, and 1,224 untyped) have been reported in Missouri as of Week 14. The influenza type for reported cases season-to-date includes 65% influenza A, 33% influenza B, and 2% untyped. The highest season-to-date rates of reported laboratory-positive influenza cases are among children aged 0-4 years (2,678 cases per 100,000 population) and 5-14 years (2,432 cases per 100,000). One laboratory-confirmed case of influenza B (Yamagata) was reported by the Missouri State Public Health Laboratory (MSPHL) during Week 14.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized 16 influenza isolates from Missouri, to date, this influenza season. Nine viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus, four viruses were antigenically similar to the B/Brisbane/60/2008-like virus, two viruses were antigenically similar to the B/Phuket/3073/2013-like virus, and one virus was antigenically similar to the A/California/07/2009-like (H1N1)pdm09 virus. An A/Hong Kong/4801/2014-like (H3N2) virus, a B/Brisbane/60/2008-like virus, and an A/California/07/2009-like (H1N1)pdm09 virus are included in the 2016-2017 Northern Hemisphere trivalent and quadrivalent vaccine formulations. A B/Phuket/3073/2013-like virus is included in the 2016-2017 Northern Hemisphere quadrivalent vaccine formulation.

- Influenza-like illness (ILI) activity is above baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 1.90% and 1.68% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories decreased during Week 14.

- Ninety-three influenza-associated deaths have been reported in Missouri as of Week 14. During Week 13, 56 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 1,805 P&I associated deaths in Missouri.[5]

- Forty-five influenza or ILI-associated outbreaks have been reported in Missouri as of Week 14. Eleven influenza or ILI-associated school closures have been reported in Missouri as of Week 14.

- Influenza activity decreased but remained elevated in the U.S. during Week 13. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Regional is defined as: Outbreaks of influenza or increases in ILI and recent laboratory-confirmed influenza in at least two but less than half the regions of the state with recent laboratory evidence of influenza in those regions.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2p6mJ23. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 14**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 14**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 14 (April 2 – April 8, 2017)*

Influenza Type	Week 12	Week 13	Week 14	2016-2017* Season-to-Date
Influenza A	871	616	212	45,094
Influenza B	2,026	1,793	756	22,474
Influenza Unknown Or Untyped	32	17	11	1,224
Total	2,929	2,426	979	68,792

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 14 (April 2 – April 8, 2017)*‡

Age Group	Week 14 Cases	Week 14 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	160	43	10,025	2,678
05-14	325	42	19,005	2,432
15-64	404	10	30,715	773
65+	90	10	9,045	970
Total	979	16	68,792	1,135

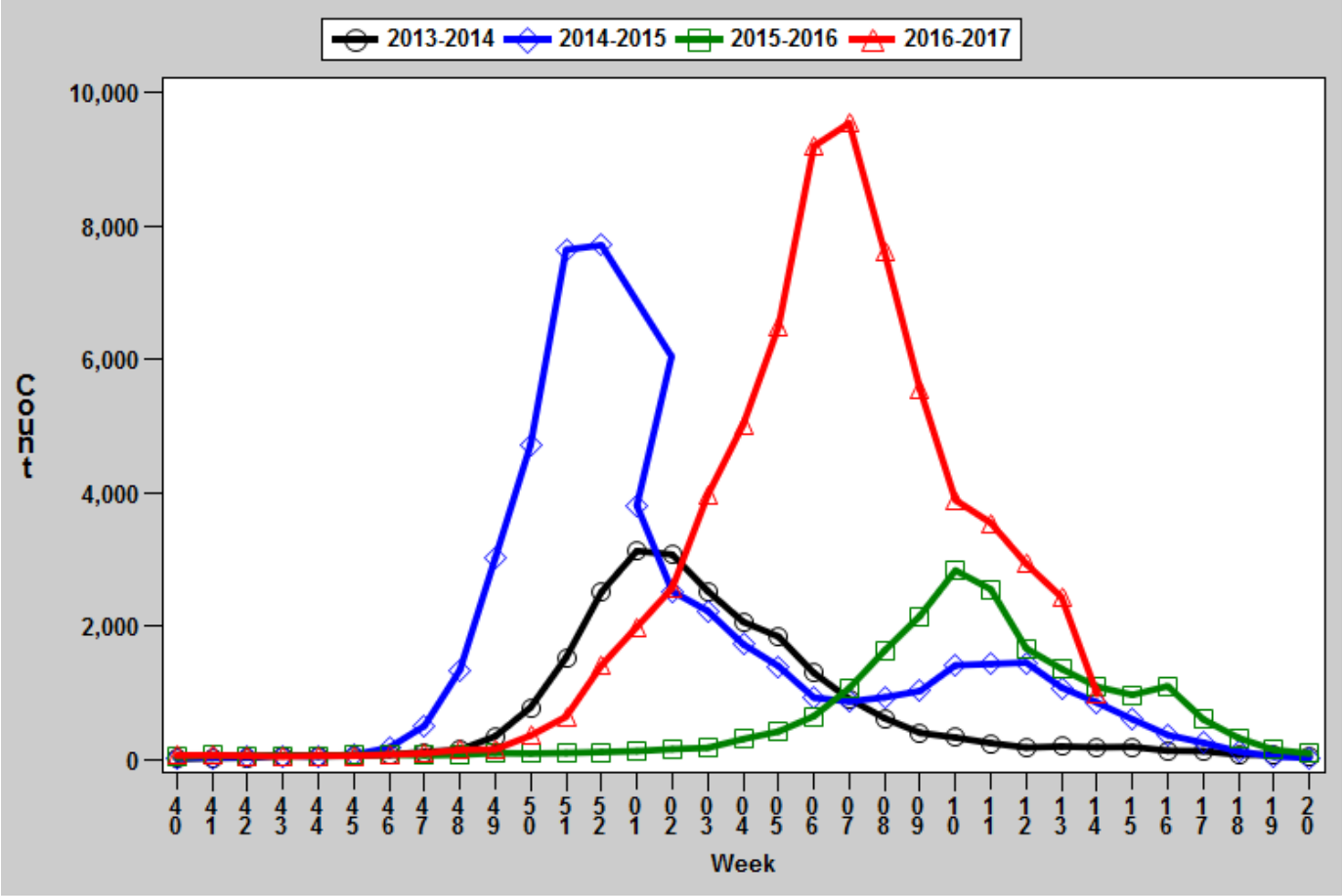
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 14 (April 2 – April 8, 2017)[*‡]

District	Week 14 Cases	Week 14 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	63	10	6,427	970
EA	510	23	21,389	947
NW	139	9	21,672	1,362
SE	108	23	9,575	2,011
SW	159	15	9,729	904
Total	979	16	68,792	1,135

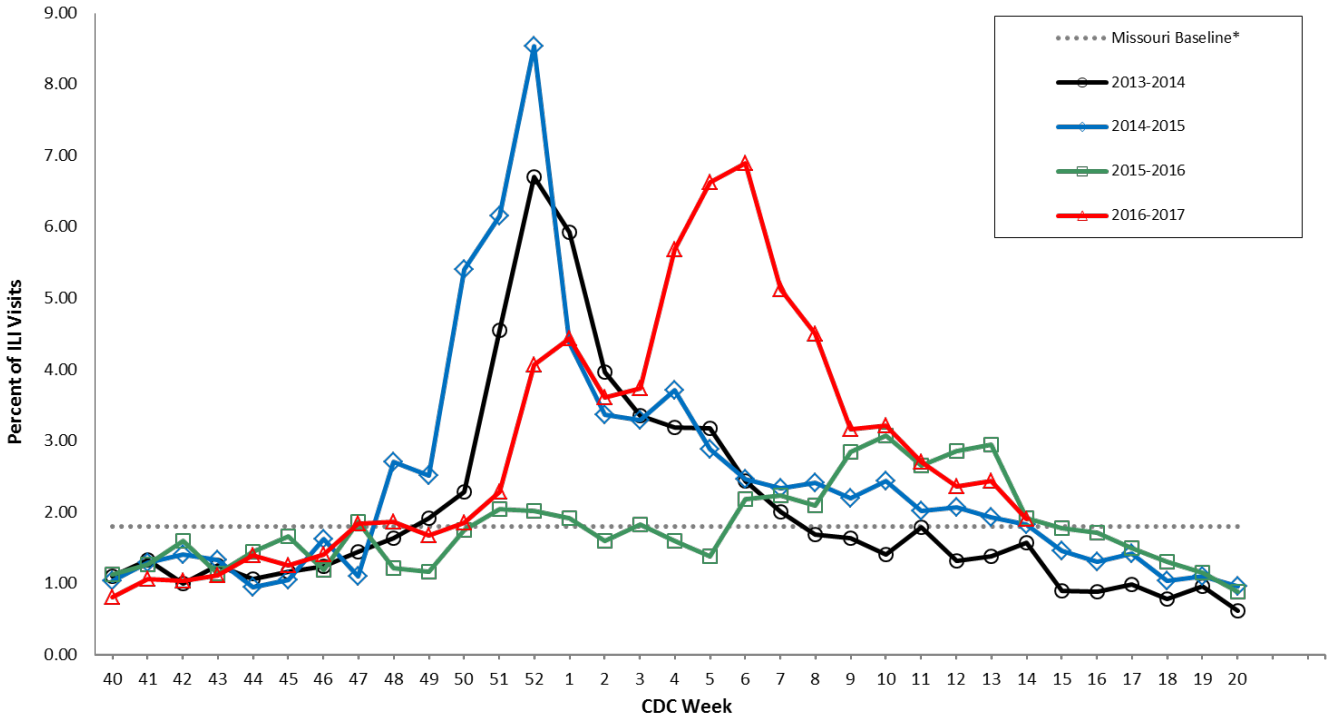
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017[*]



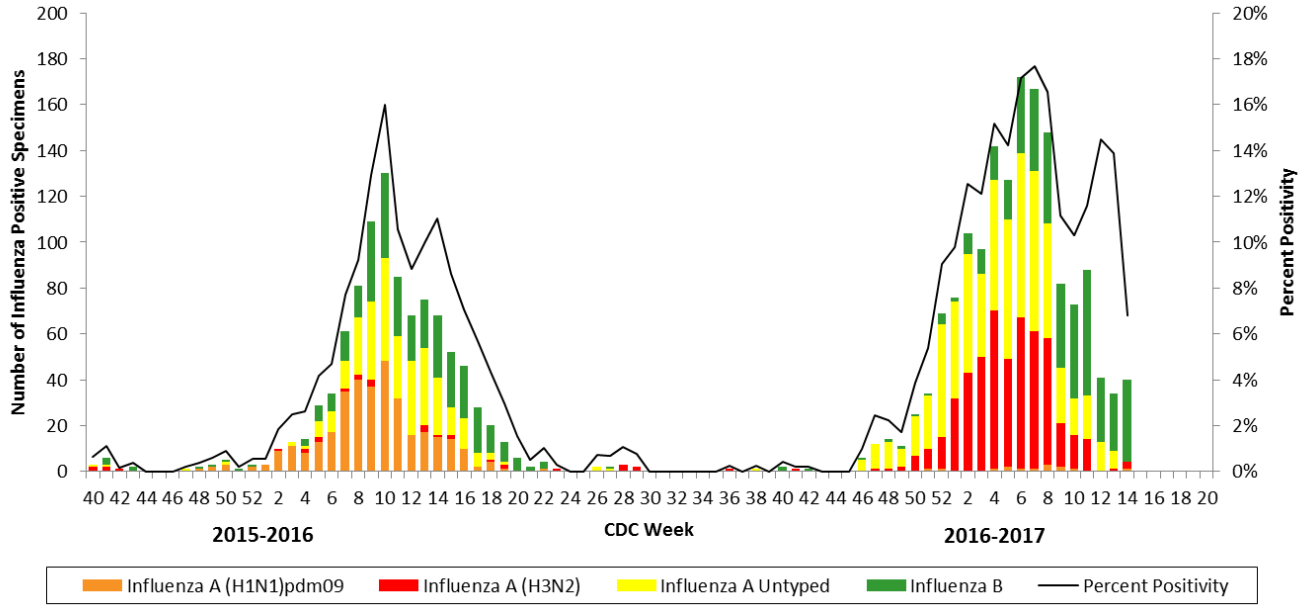
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



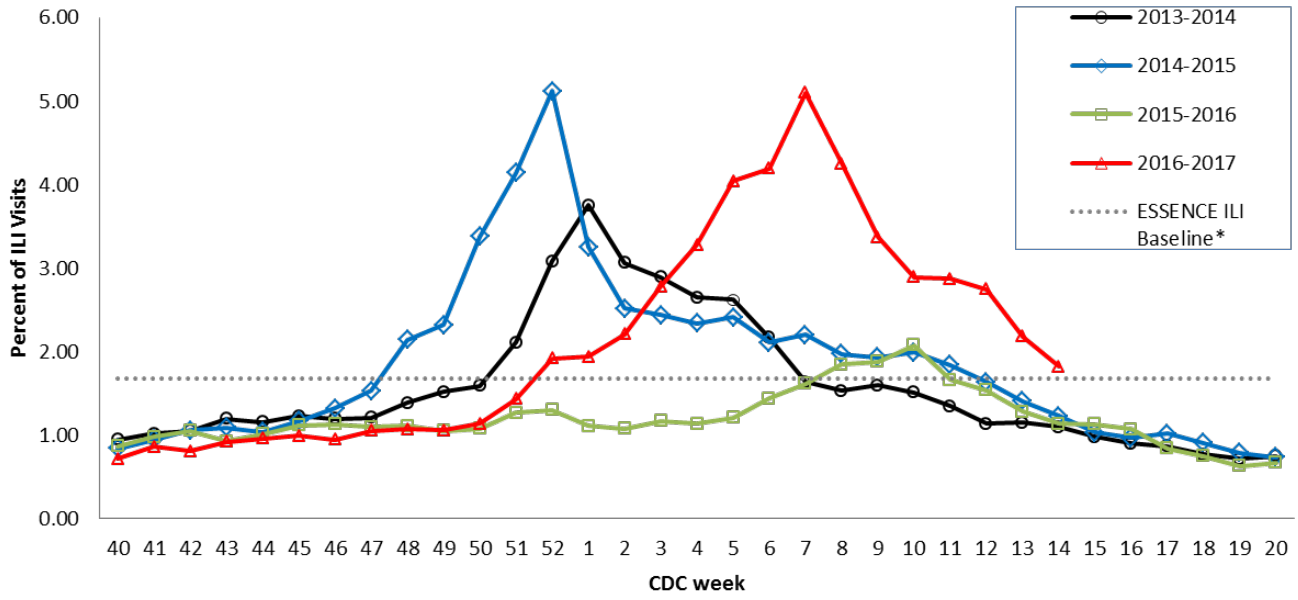
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

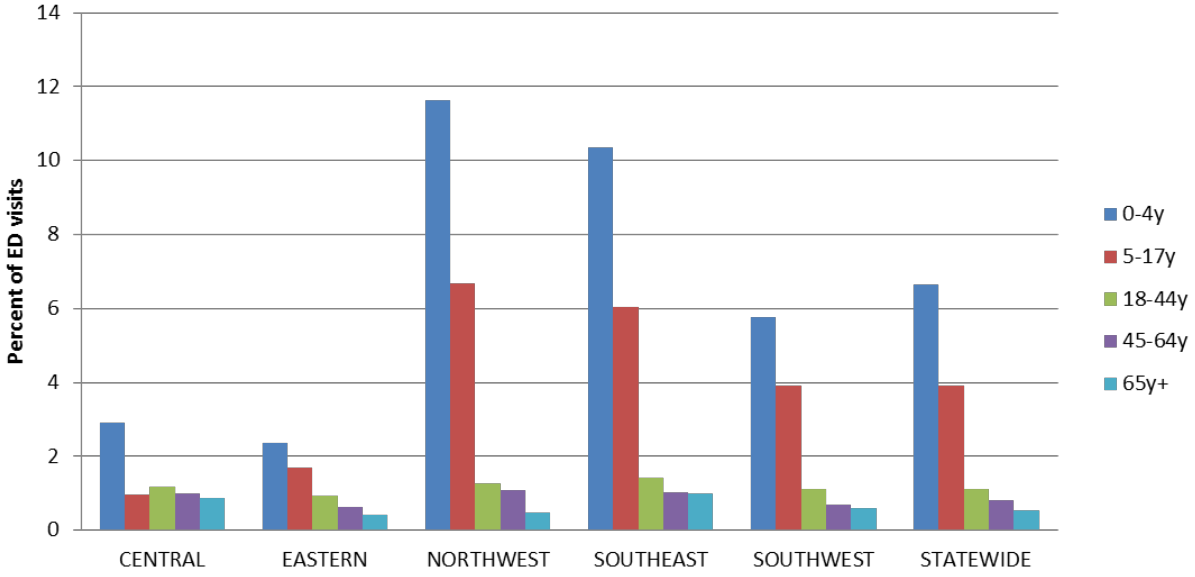
Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†



*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

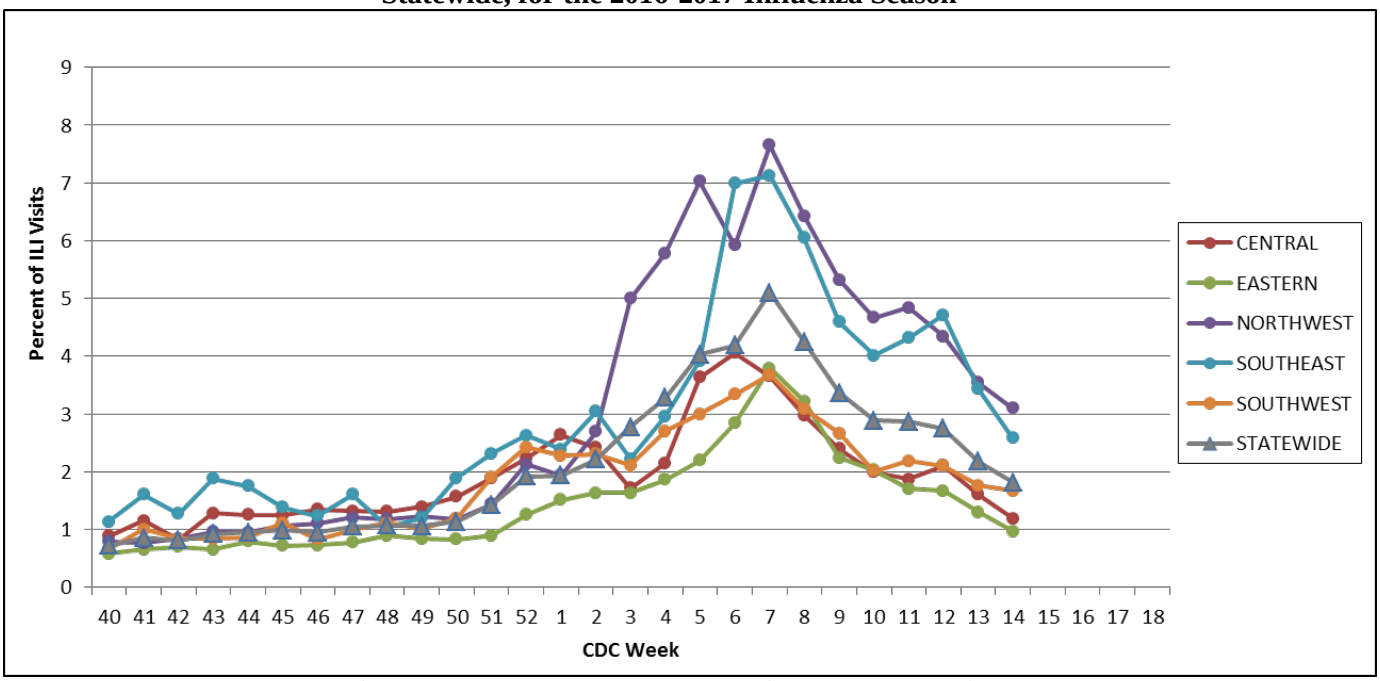
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 14, 2017



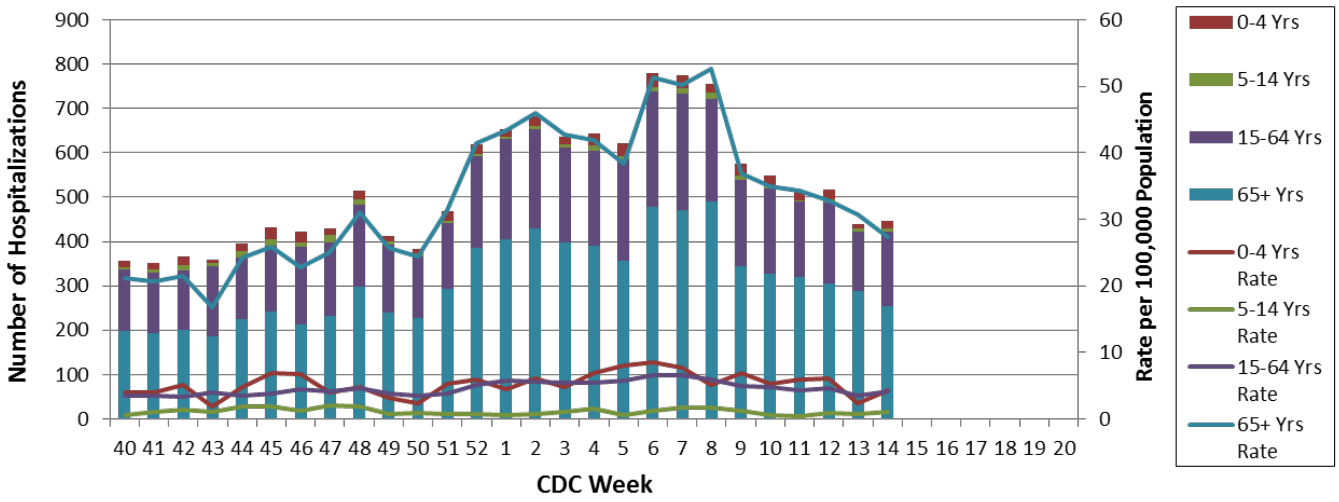
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*†



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Changes in ILI surveillance for the Northwest District were implemented on January 16, 2017.
†Not all data was available for the Northwest District during Week 6.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 14, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView):
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 15: April 9 – April 15, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Regional[2].

- A season-to-date total of 69,784 laboratory-positive[3] influenza cases (45,328 influenza A, 23,215 influenza B, and 1,241 untyped) have been reported in Missouri as of Week 15. The influenza type for reported cases season-to-date includes 65% influenza A, 33% influenza B, and 2% untyped. The highest season-to-date rates of reported laboratory-positive influenza cases are among children aged 0-4 years (2,723 cases per 100,000 population) and 5-14 years (2,467 cases per 100,000). Two laboratory-confirmed cases of influenza B (Yamagata) were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 15.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized 17 influenza isolates from Missouri, to date, this influenza season. Nine viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus, four viruses were antigenically similar to the B/Brisbane/60/2008-like virus, three viruses were antigenically similar to the B/Phuket/3073/2013-like virus, and one virus was antigenically similar to the A/California/07/2009-like (H1N1)pdm09 virus. An A/Hong Kong/4801/2014-like (H3N2) virus, a B/Brisbane/60/2008-like virus, and an A/California/07/2009-like (H1N1)pdm09 virus are included in the 2016-2017 Northern Hemisphere trivalent and quadrivalent vaccine formulations. A B/Phuket/3073/2013-like virus is included in the 2016-2017 Northern Hemisphere quadrivalent vaccine formulation.

- Influenza-like illness (ILI) activity is below baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 1.45% and 1.62% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories decreased during Week 15.

- Ninety-three influenza-associated deaths have been reported in Missouri as of Week 15. During Week 14, 65 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 1,870 P&I associated deaths in Missouri.[5]

- Forty-five influenza or ILI-associated outbreaks have been reported in Missouri as of Week 15. Eleven influenza or ILI-associated school closures have been reported in Missouri as of Week 15.

- Influenza activity decreased but remained elevated in the U.S. during Week 14. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Regional is defined as: Outbreaks of influenza or increases in ILI and recent laboratory-confirmed influenza in at least two but less than half the regions of the state with recent laboratory evidence of influenza in those regions.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2pDqTP2. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 15**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 15**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 15 (April 9 – April 15, 2017)*

Influenza Type	Week 13	Week 14	Week 15	2016-2017* Season-to-Date
Influenza A	658	270	107	45,328
Influenza B	1,898	957	379	23,215
Influenza Unknown Or Untyped	19	19	5	1,241
Total	2,575	1,246	491	69,784

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 15 (April 9 – April 15, 2017)*‡

Age Group	Week 15 Cases	Week 15 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	98	26	10,194	2,723
05-14	146	19	19,276	2,467
15-64	189	5	31,134	783
65+	58	6	9,178	985
Total	491	8	69,784	1,151

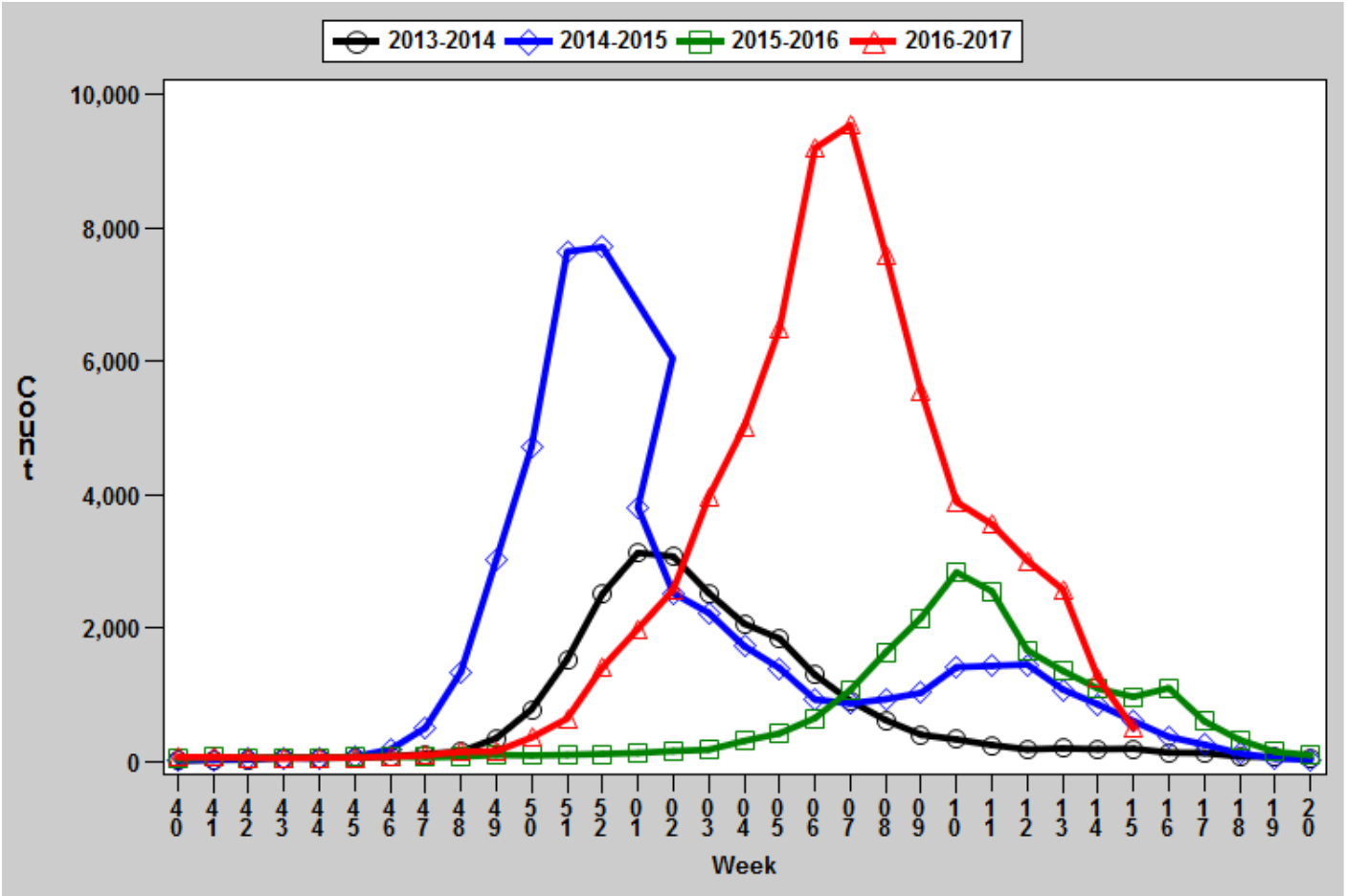
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 15 (April 9 – April 15, 2017)[*‡]

District	Week 15 Cases	Week 15 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	38	6	6,491	980
EA	172	8	21,826	967
NW	115	7	21,950	1,379
SE	87	18	9,680	2,033
SW	79	7	9,837	914
Total	491	8	69,784	1,151

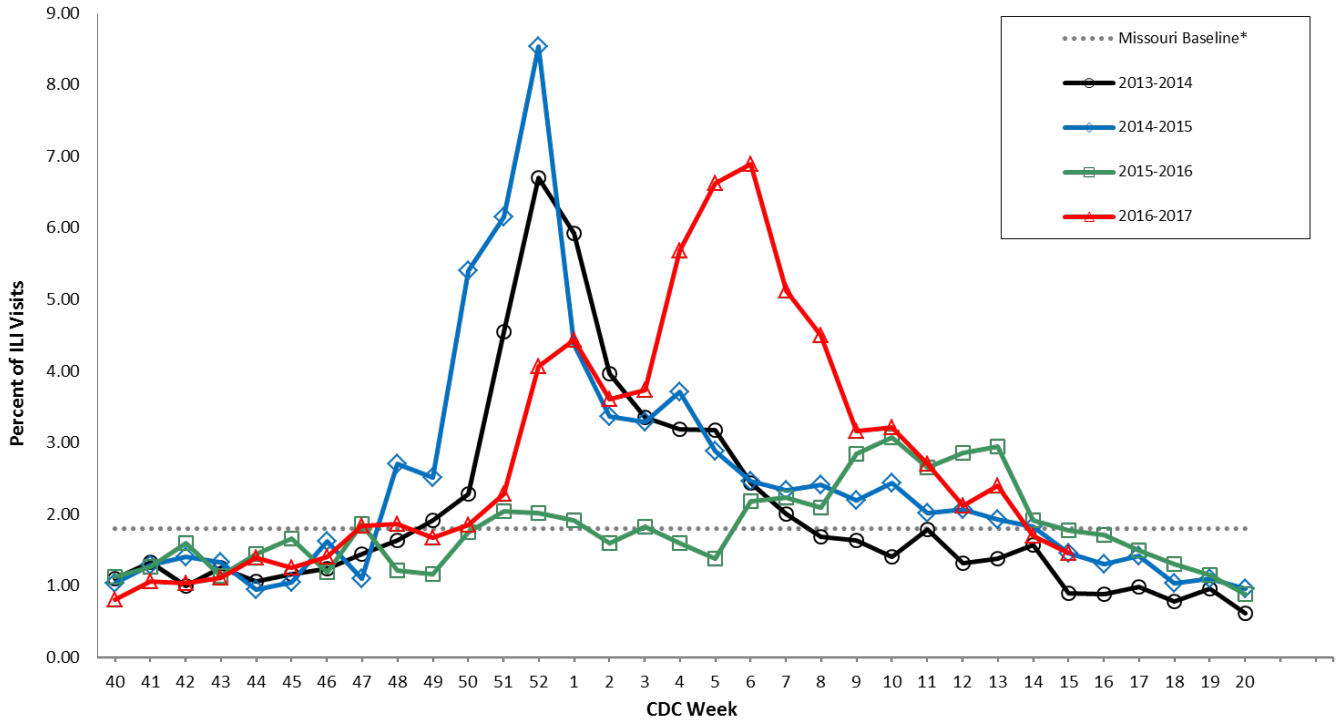
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017[*]



[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

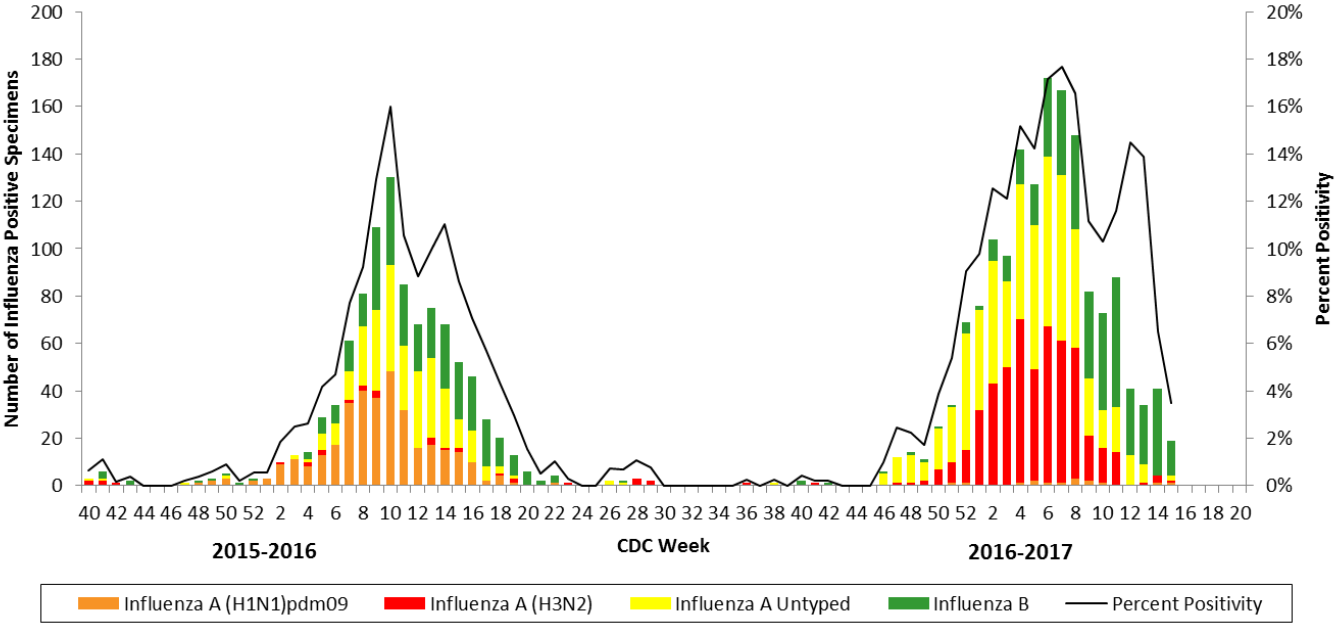
Figure 5. Percentage of Outpatient Visits for Influenza-like Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).

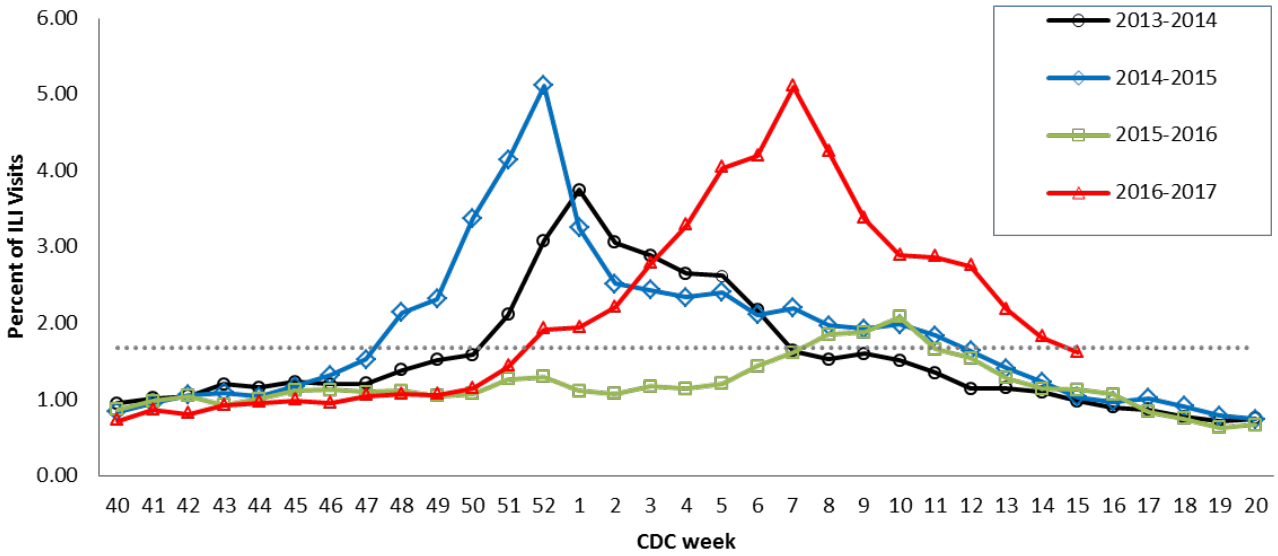
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



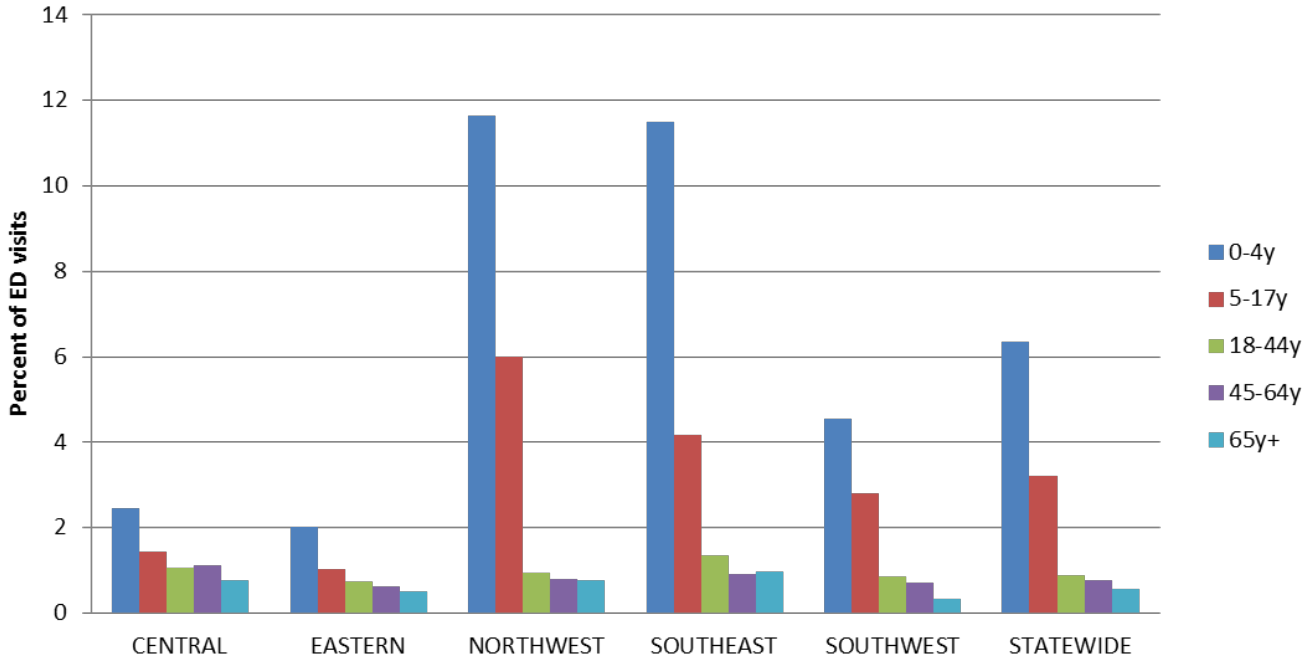
Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†



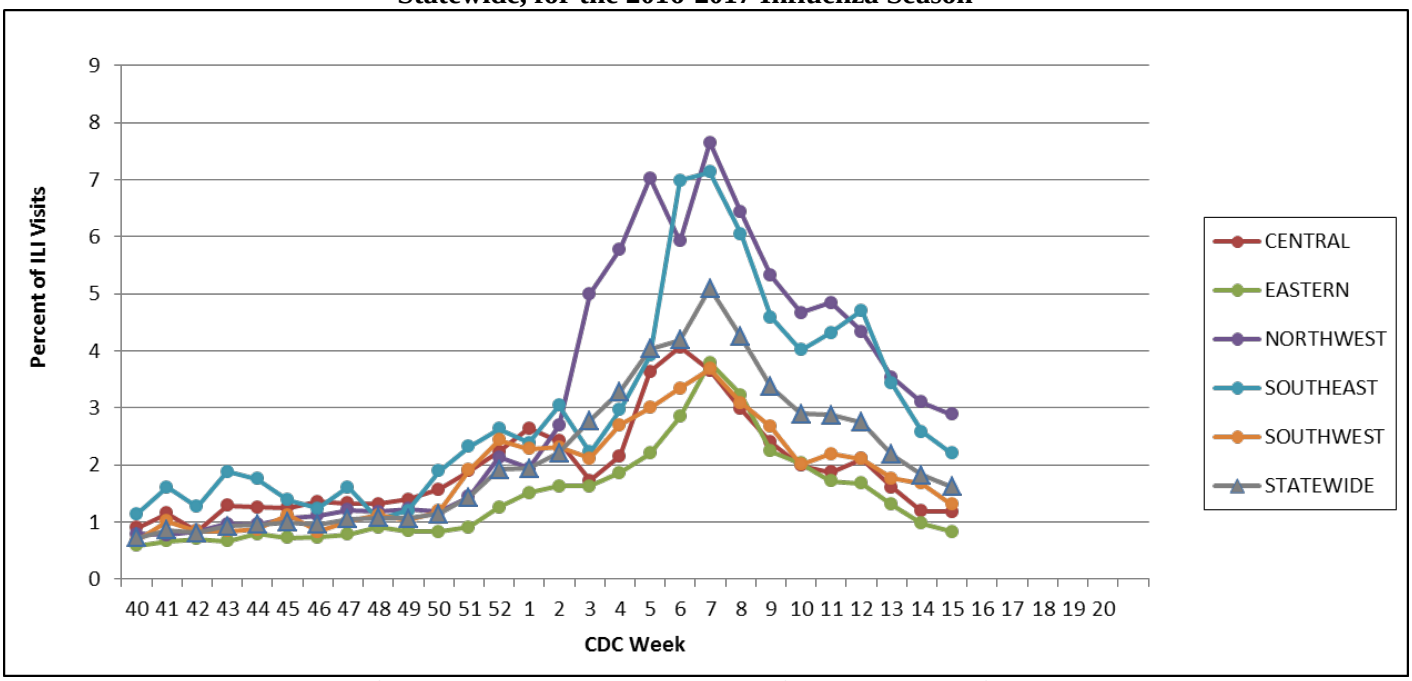
*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 15, 2017



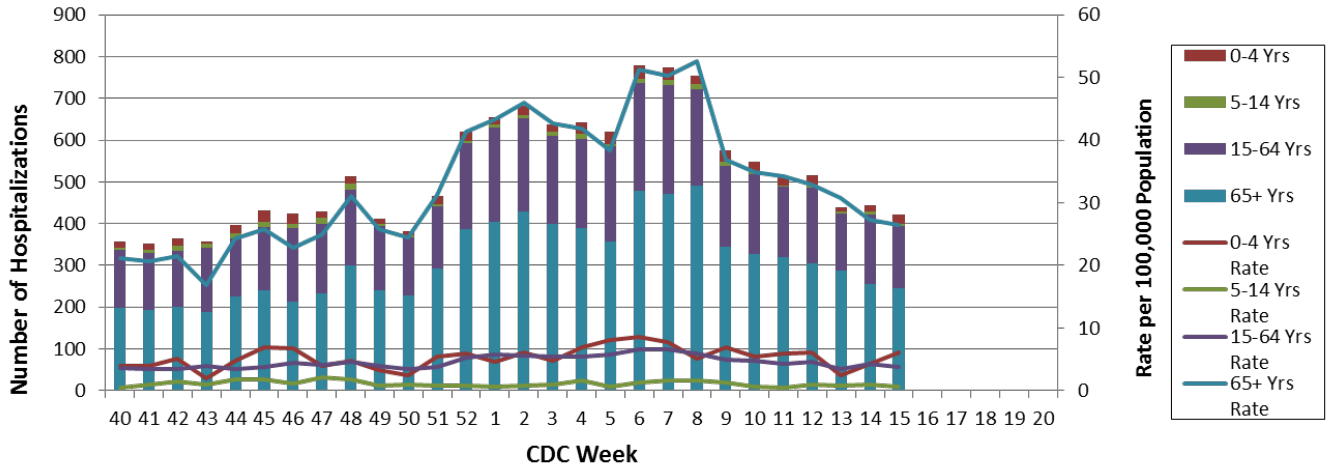
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*†



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Changes in ILI surveillance for the Northwest District were implemented on January 16, 2017.
†Not all data was available for the Northwest District during Week 6.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 15, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView):
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 16: April 16 – April 22, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri decreased to Local[2].

- A season-to-date total of 70,409 laboratory-positive[3] influenza cases (45,462 influenza A, 23,704 influenza B, and 1,243 untyped) have been reported in Missouri as of Week 16. The influenza type for reported cases season-to-date includes 64% influenza A, 34% influenza B, and 2% untyped. The highest season-to-date rates of reported laboratory-positive influenza cases are among children aged 0-4 years (2,751 cases per 100,000 population) and 5-14 years (2,488 cases per 100,000). No laboratory-confirmed cases of influenza were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 16.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized 17 influenza isolates from Missouri, to date, this influenza season. Nine viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus, four viruses were antigenically similar to the B/Brisbane/60/2008-like virus, three viruses were antigenically similar to the B/Phuket/3073/2013-like virus, and one virus was antigenically similar to the A/California/07/2009-like (H1N1)pdm09 virus. An A/Hong Kong/4801/2014-like (H3N2) virus, a B/Brisbane/60/2008-like virus, and an A/California/07/2009-like (H1N1)pdm09 virus are included in the 2016-2017 Northern Hemisphere trivalent and quadrivalent vaccine formulations. A B/Phuket/3073/2013-like virus is included in the 2016-2017 Northern Hemisphere quadrivalent vaccine formulation.

- Influenza-like illness (ILI) activity is below baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 1.28% and 1.29% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased during Week 16.

- Ninety-four influenza-associated deaths have been reported in Missouri as of Week 16. During Week 15, 64 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 1,934 P&I associated deaths in Missouri.[5]

- Forty-five influenza or ILI-associated outbreaks have been reported in Missouri as of Week 16. Eleven influenza or ILI-associated school closures have been reported in Missouri as of Week 16.

- Influenza activity decreased in the U.S. during Week 15. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Local is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single regions of the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2q8lJLt. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 16**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 16**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 16 (April 16 – April 22, 2017)*

Influenza Type	Week 14	Week 15	Week 16	2016-2017* Season-to-Date
Influenza A	283	134	84	45,462
Influenza B	1,014	501	283	23,704
Influenza Unknown Or Untyped	18	5	2	1,243
Total	1,315	640	369	70,409

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 16 (April 16 – April 22, 2017)*‡

Age Group	Week 16 Cases	Week 16 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	60	16	10,298	2,751
05-14	110	14	19,441	2,488
15-64	154	4	31,415	790
65+	45	5	9,253	993
Total	369	6	70,409	1,161

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 16 (April 16 – April 22, 2017)[*‡]

District	Week 16 Cases	Week 16 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	24	4	6,537	987
EA	120	5	22,073	978
NW	56	4	22,024	1,384
SE	95	20	9,802	2,059
SW	74	7	9,973	927
Total	369	6	70,409	1,161

[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
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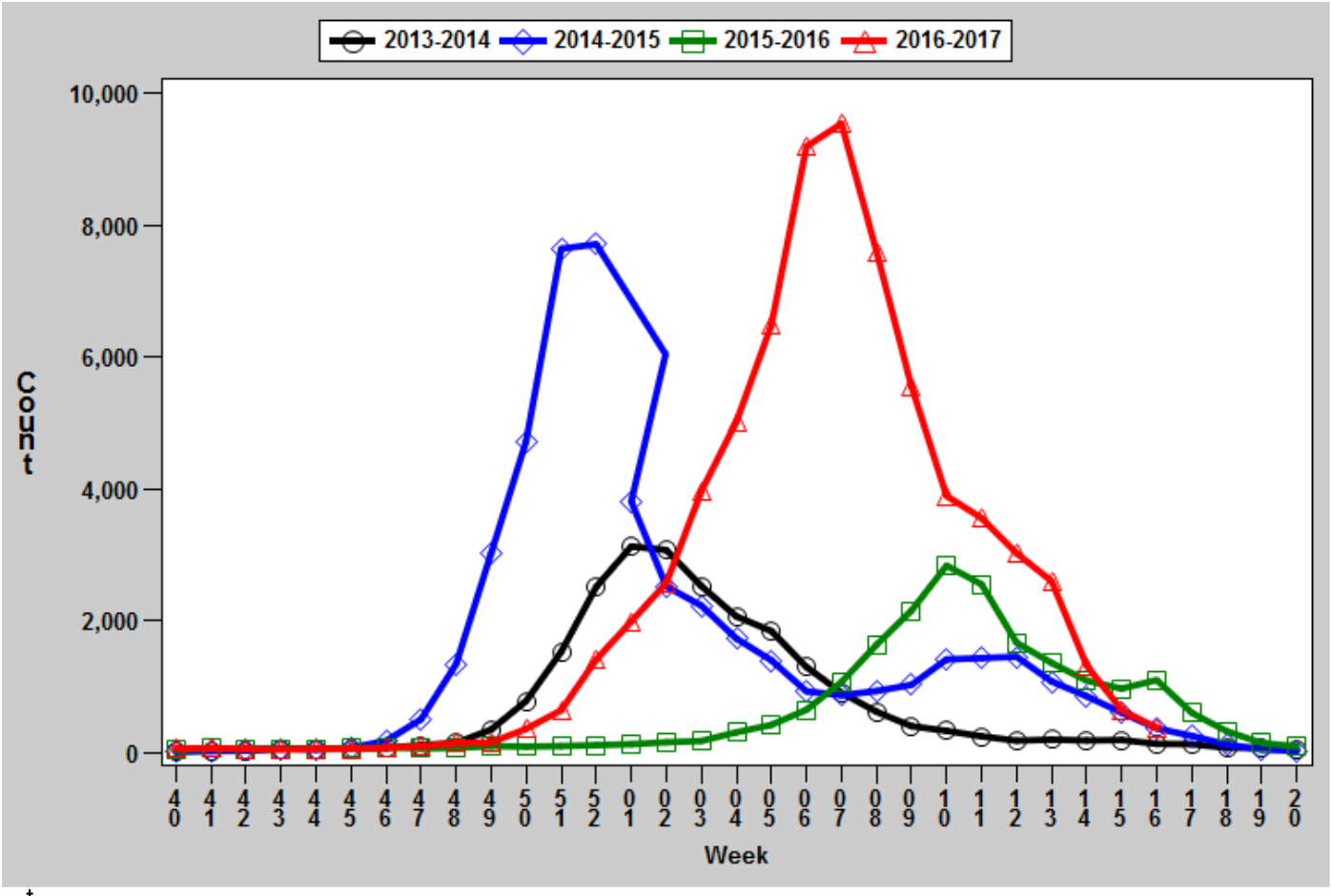
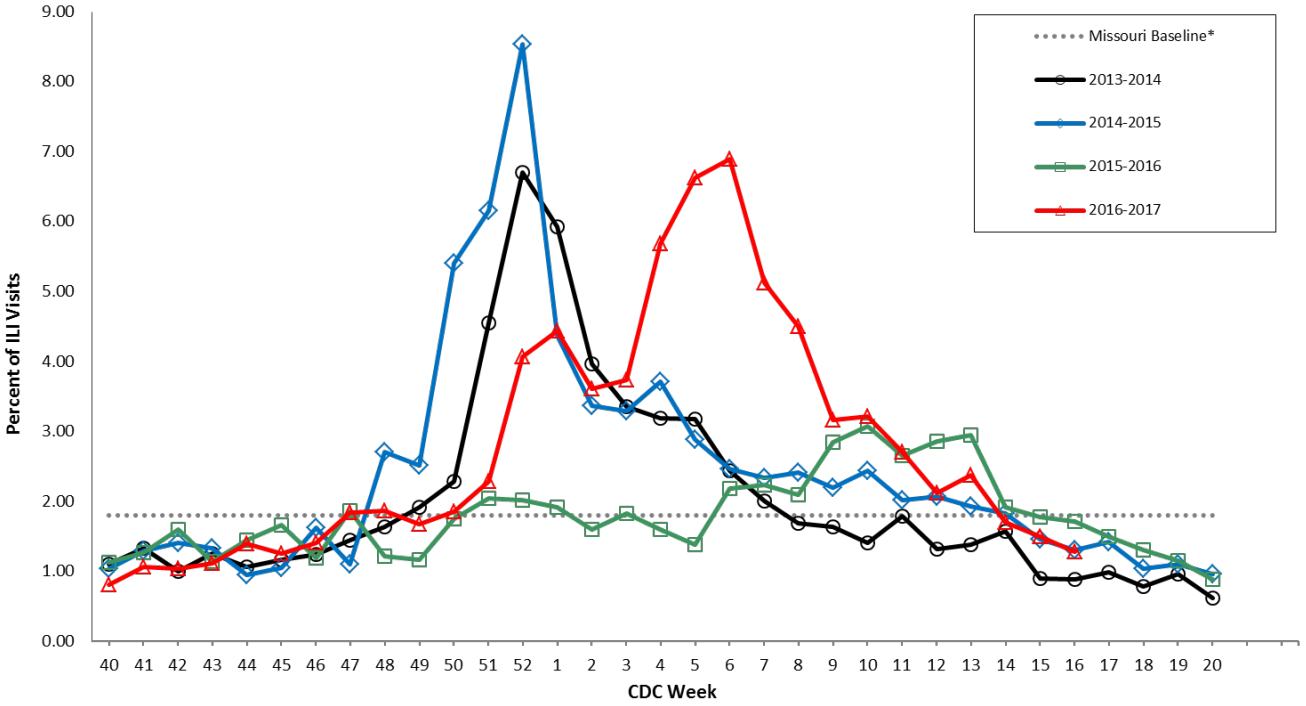


[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

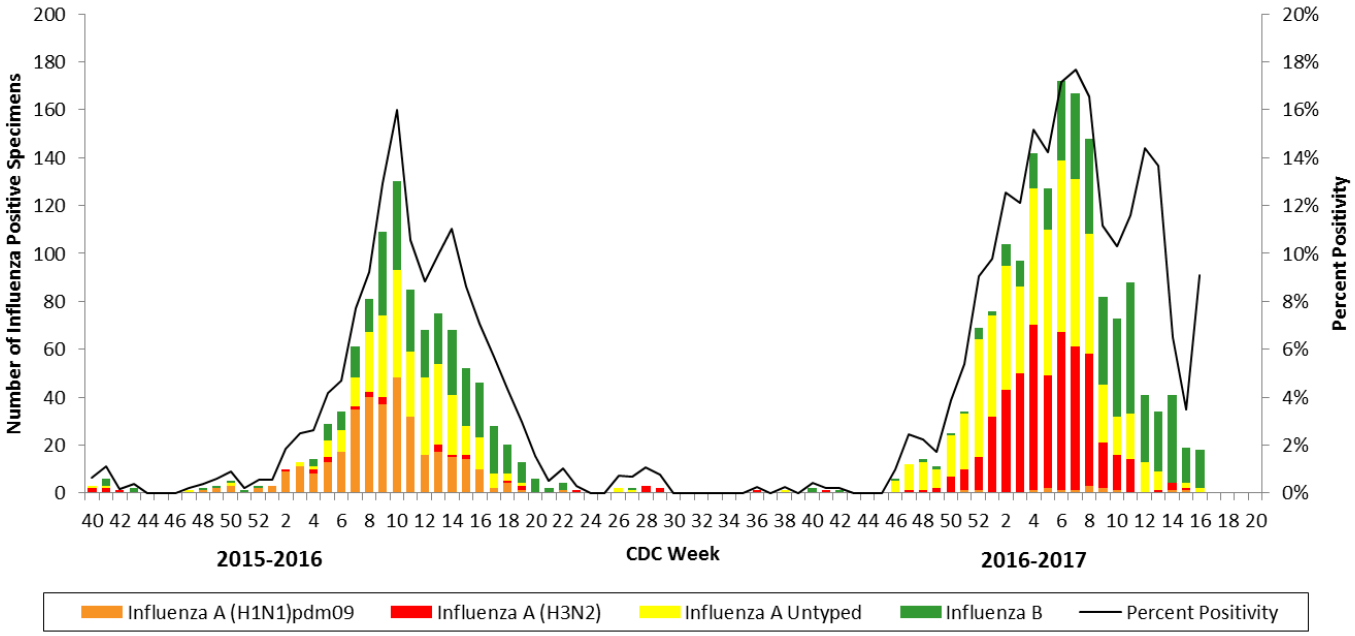
Figure 5. Percentage of Outpatient Visits for Influenza-like Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).

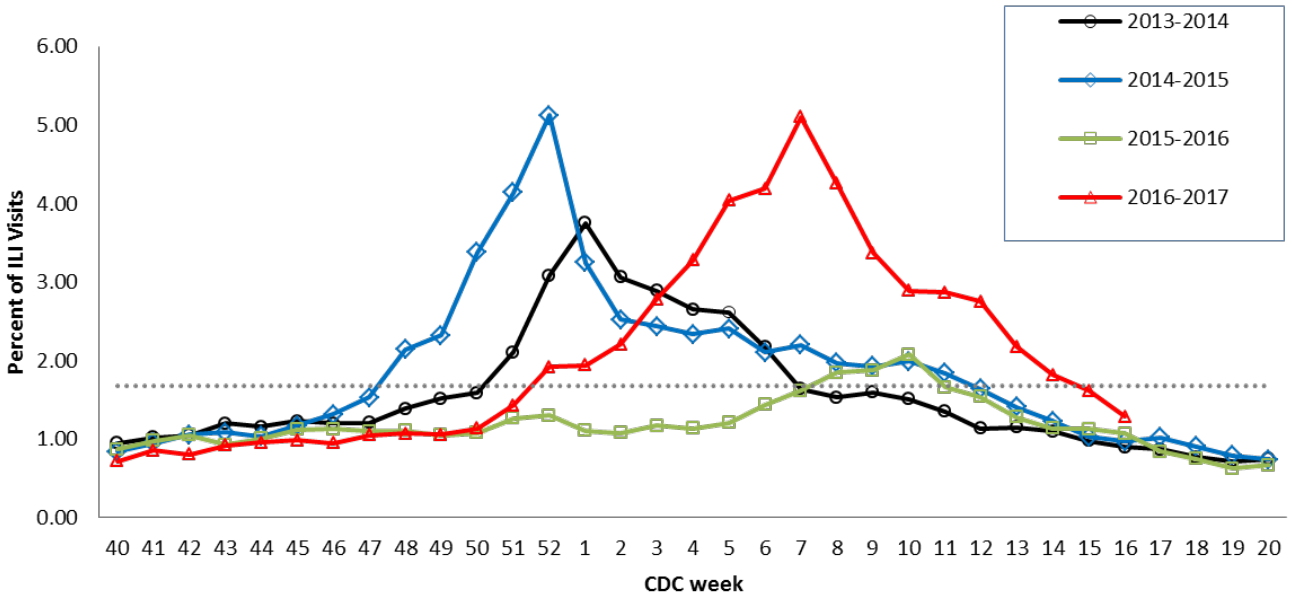
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

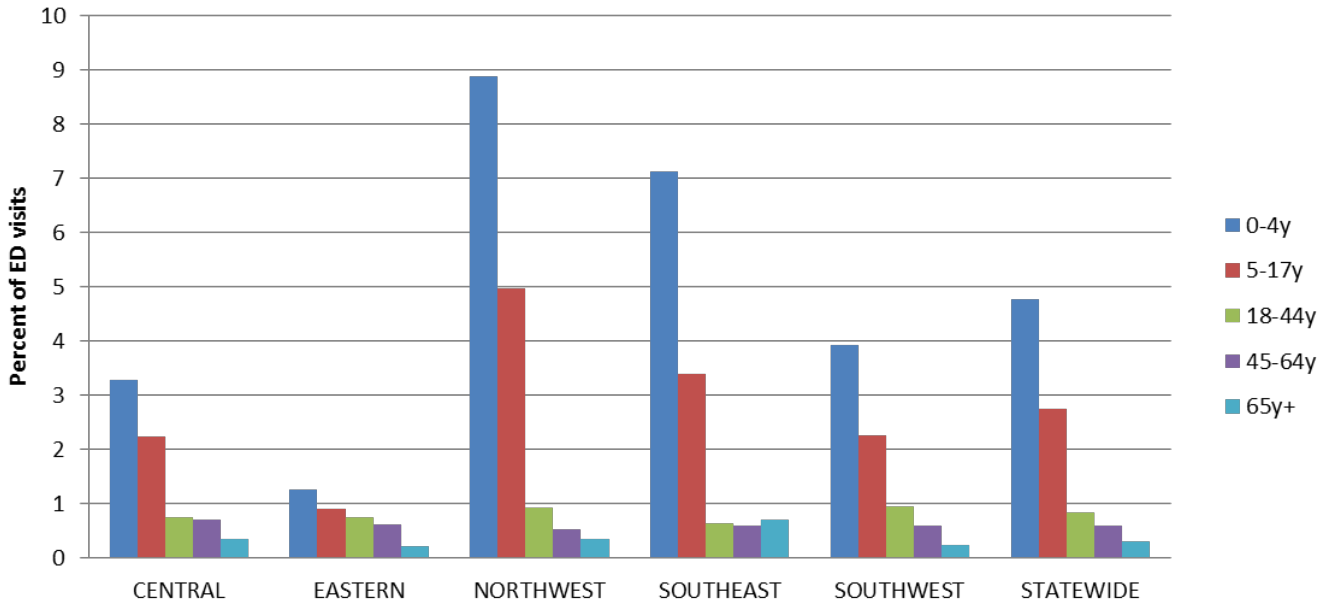
Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†



*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

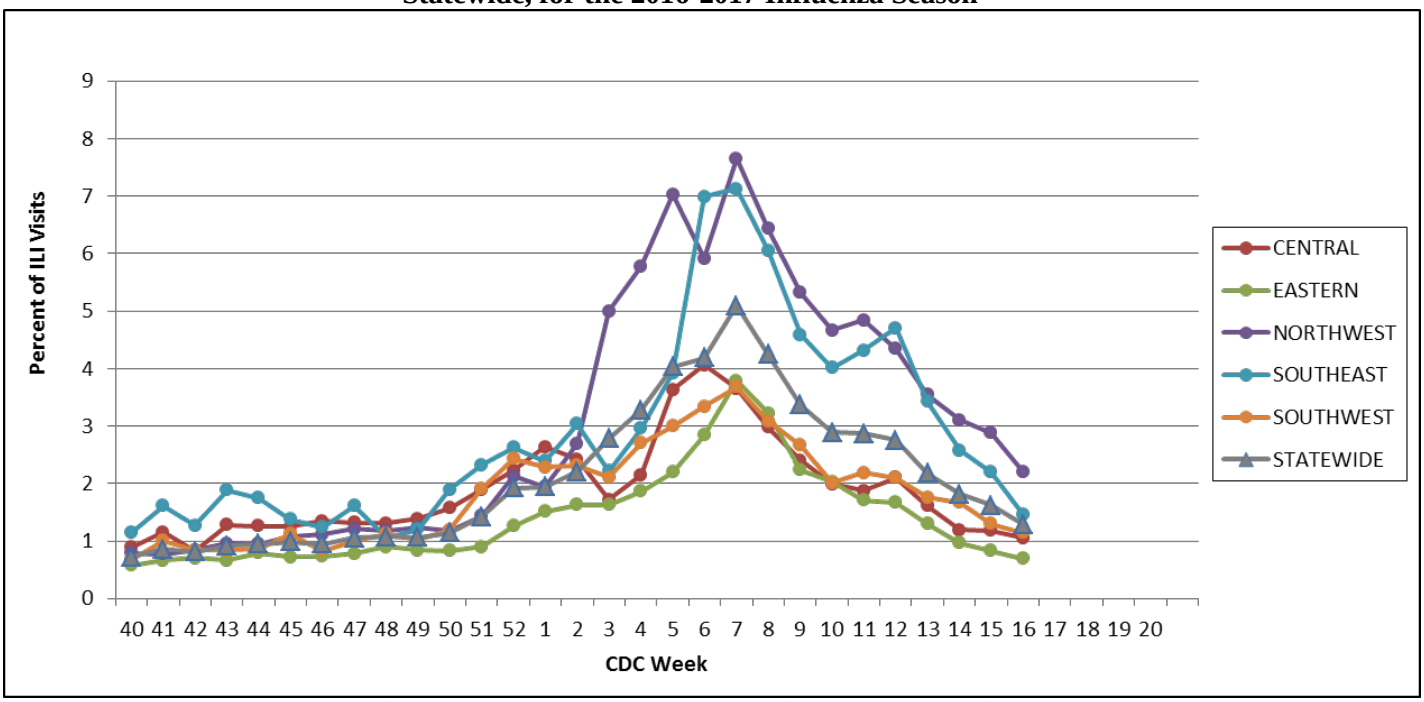
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 16, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season[*†]



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Changes in ILI surveillance for the Northwest District were implemented on January 16, 2017.
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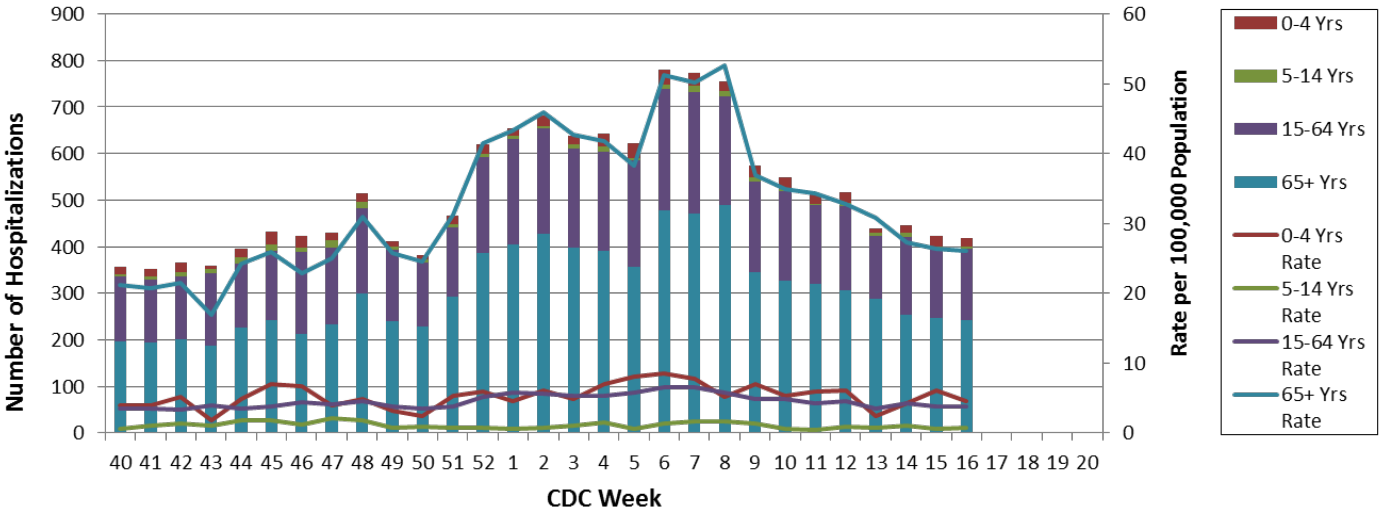
Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 16, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView):
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 17: April 23 – April 29, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Local[2].

- A season-to-date total of 70,980 laboratory-positive[3] influenza cases (45,601 influenza A, 24,119 influenza B, and 1,260 untyped) have been reported in Missouri as of Week 17. The influenza type for reported cases season-to-date includes 64% influenza A, 34% influenza B, and 2% untyped. The highest season-to-date rates of reported laboratory-positive influenza cases are among children aged 0-4 years (2,771 cases per 100,000 population) and 5-14 years (2,505 cases per 100,000). One laboratory-confirmed case of influenza B (Yamagata) was reported by the Missouri State Public Health Laboratory (MSPHL) during Week 17.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized 18 influenza isolates from Missouri, to date, this influenza season. Ten viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus, four viruses were antigenically similar to the B/Brisbane/60/2008-like virus, three viruses were antigenically similar to the B/Phuket/3073/2013-like virus, and one virus was antigenically similar to the A/California/07/2009-like (H1N1)pdm09 virus. An A/Hong Kong/4801/2014-like (H3N2) virus, a B/Brisbane/60/2008-like virus, and an A/California/07/2009-like (H1N1)pdm09 virus are included in the 2016-2017 Northern Hemisphere trivalent and quadrivalent vaccine formulations. A B/Phuket/3073/2013-like virus is included in the 2016-2017 Northern Hemisphere quadrivalent vaccine formulation.

- Influenza-like illness (ILI) activity is below baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 1.23% and 1.20% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories decreased during Week 17.

- Ninety-seven influenza-associated deaths have been reported in Missouri as of Week 17. During Week 16, 60 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 1,994 P&I associated deaths in Missouri.[5]

- Forty-five influenza or ILI-associated outbreaks have been reported in Missouri as of Week 17. Eleven influenza or ILI-associated school closures have been reported in Missouri as of Week 17.

- Influenza activity decreased in the U.S. during Week 16. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Local is defined as: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single region of the state.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2pL6ANb. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 17**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 17**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 17 (April 23 – April 29, 2017)*

Influenza Type	Week 15	Week 16	Week 17	2016-2017* Season-to-Date
Influenza A	143	91	36	45,601
Influenza B	540	314	102	24,119
Influenza Unknown Or Untyped	5	2	1	1,260
Total	688	407	139	70,980

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 17 (April 23 – April 29, 2017)*‡

Age Group	Week 17 Cases	Week 17 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	25	7	10,372	2,771
05-14	42	5	19,575	2,505
15-64	56	1	31,699	797
65+	16	2	9,332	1,001
Total	139	2	70,980	1,171

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 17 (April 23 – April 29, 2017)[*‡]

District	Week 17 Cases	Week 17 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	11	2	6,564	991
EA	45	2	22,123	980
NW	10	1	22,374	1,406
SE	60	13	9,915	2,083
SW	13	1	10,004	930
Total	139	2	70,980	1,171

[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

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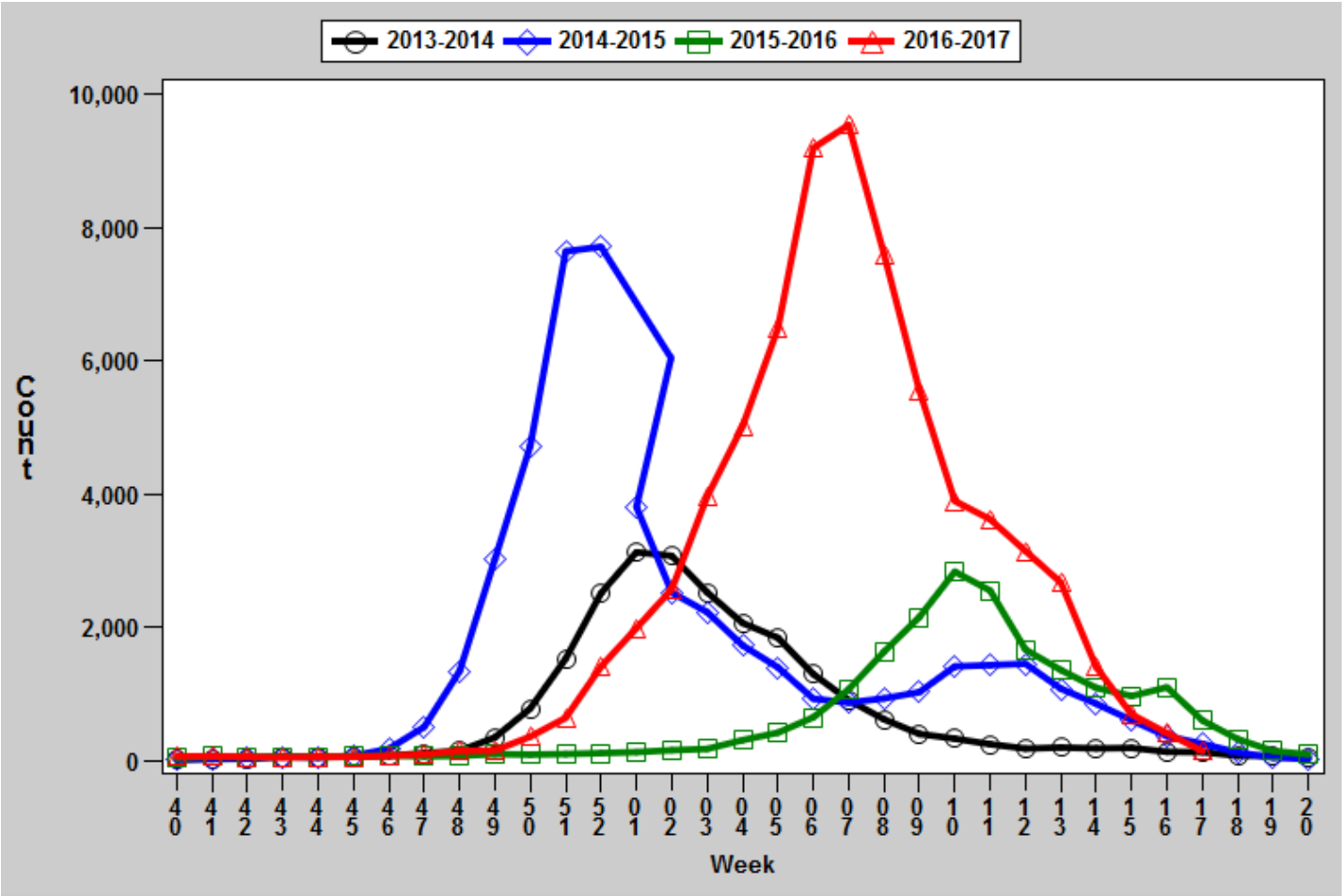

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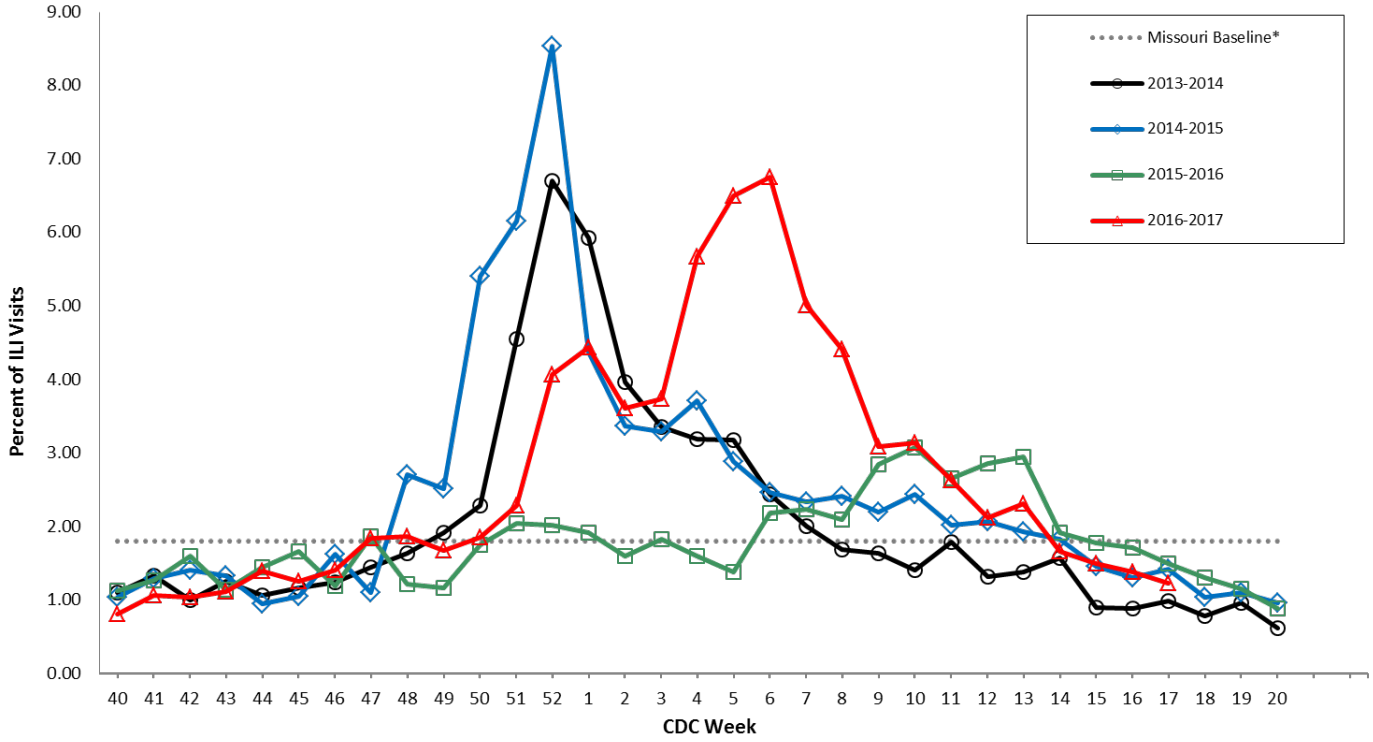
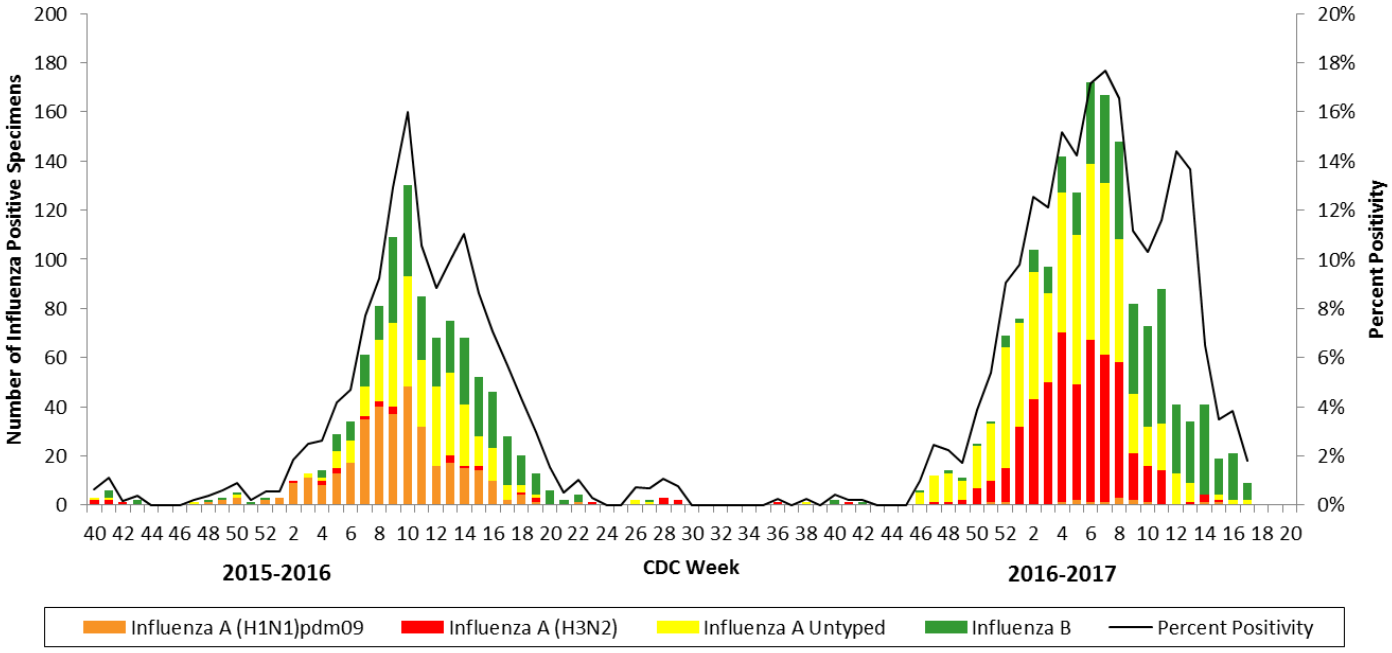
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



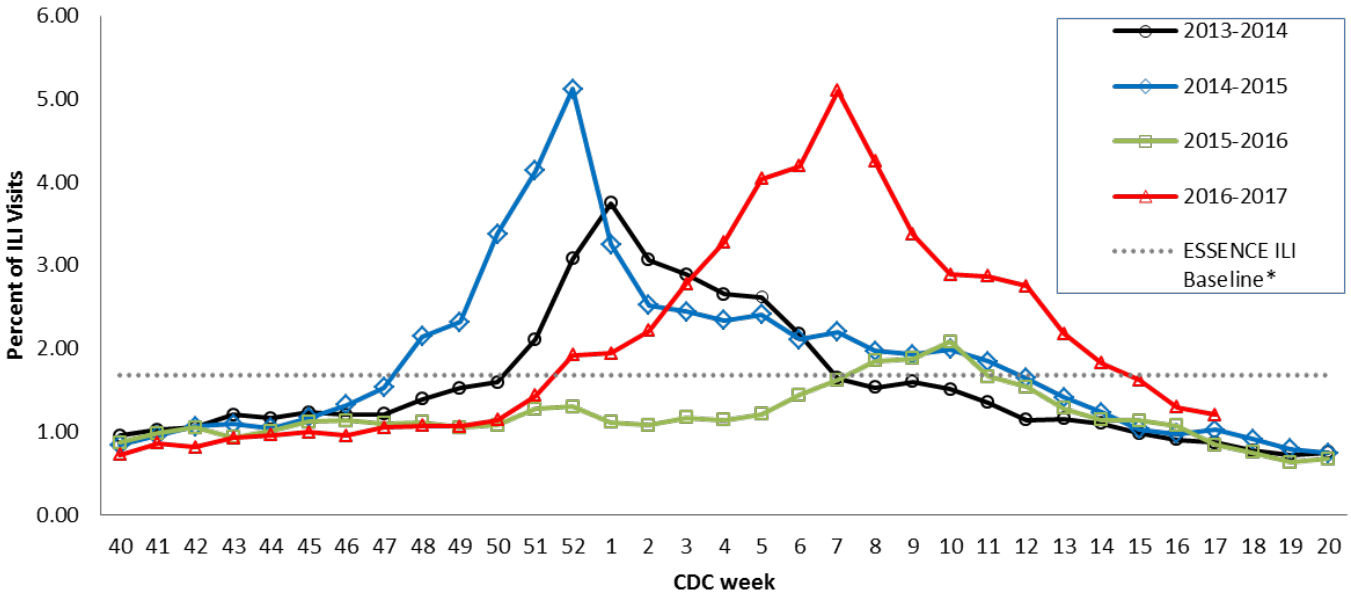
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

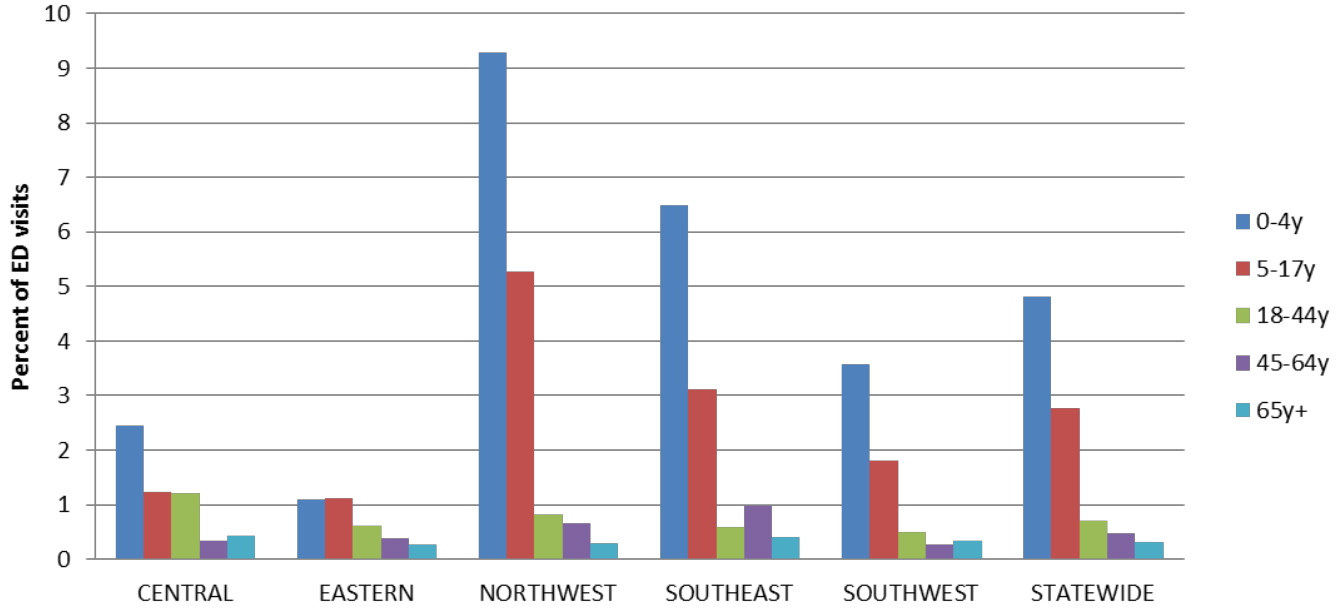
Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†



*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

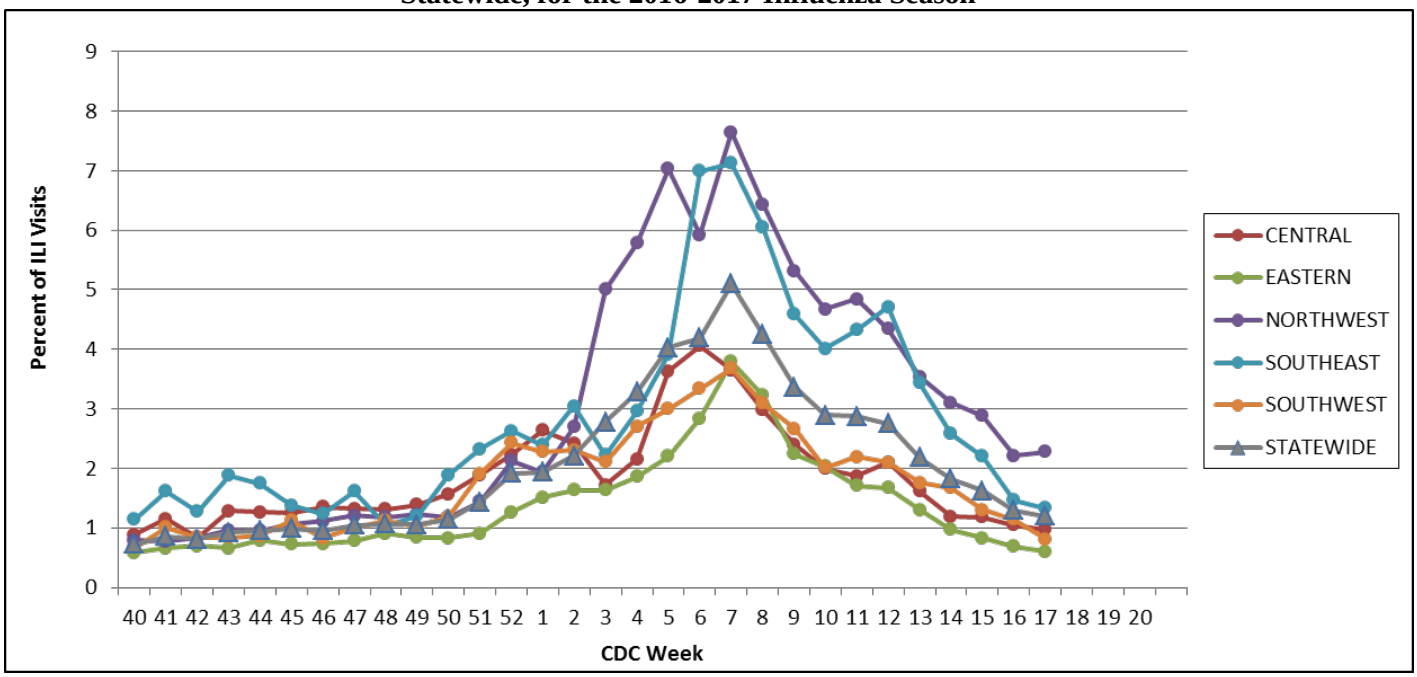
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 17, 2017



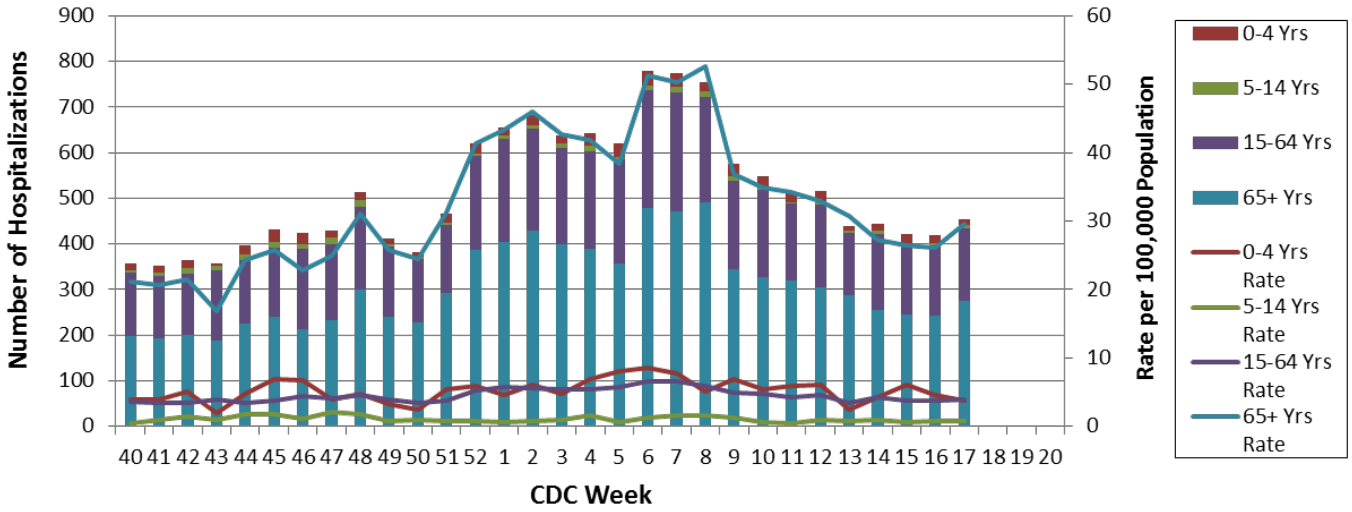
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*†



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Changes in ILI surveillance for the Northwest District were implemented on January 16, 2017.
†Not all data was available for the Northwest District during Week 6.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 17, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView):
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 18: April 30 – May 6, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri decreased to Sporadic[2].

- A season-to-date total of 71,293 laboratory-positive[3] influenza cases (45,689 influenza A, 24,342 influenza B, and 1,262 untyped) have been reported in Missouri as of Week 18. The influenza type for reported cases season-to-date includes 64% influenza A, 34% influenza B, and 2% untyped. The highest season-to-date rates of reported laboratory-positive influenza cases are among children aged 0-4 years (2,781 cases per 100,000 population) and 5-14 years (2,514 cases per 100,000). One laboratory-confirmed case of influenza A (H3N2) was reported by the Missouri State Public Health Laboratory (MSPHL) during Week 18.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized 19 influenza isolates from Missouri, to date, this influenza season. Eleven viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus, four viruses were antigenically similar to the B/Brisbane/60/2008-like virus, three viruses were antigenically similar to the B/Phuket/3073/2013-like virus, and one virus was antigenically similar to the A/California/07/2009-like (H1N1)pdm09 virus. An A/Hong Kong/4801/2014-like (H3N2) virus, a B/Brisbane/60/2008-like virus, and an A/California/07/2009-like (H1N1)pdm09 virus are included in the 2016-2017 Northern Hemisphere trivalent and quadrivalent vaccine formulations. A B/Phuket/3073/2013-like virus is included in the 2016-2017 Northern Hemisphere quadrivalent vaccine formulation.

- Influenza-like illness (ILI) activity is below baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 1.44% and 1.19% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories decreased during Week 18.

- Ninety-eight influenza-associated deaths have been reported in Missouri as of Week 18. During Week 17, 40 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 2,034 P&I associated deaths in Missouri.[5]

- Forty-six influenza or ILI-associated outbreaks have been reported in Missouri as of Week 18. Eleven influenza or ILI-associated school closures have been reported in Missouri as of Week 18.

- Influenza activity decreased in the U.S. during Week 17. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Sporadic is defined as: Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2q6zBn2. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 18**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 18**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 18 (April 30 – May 6, 2017)*

Influenza Type	Week 16	Week 17	Week 18	2016-2017* Season-to-Date
Influenza A	99	39	17	45,689
Influenza B	349	123	54	24,342
Influenza Unknown Or Untyped	4	1	0	1,262
Total	452	163	71	71,293

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 18 (April 30 – May 6, 2017)*‡

Age Group	Week 18 Cases	Week 18 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	7	2	10,409	2,781
05-14	8	1	19,647	2,514
15-64	40	1	31,860	801
65+	16	2	9,375	1,006
Total	71	1	71,293	1,176

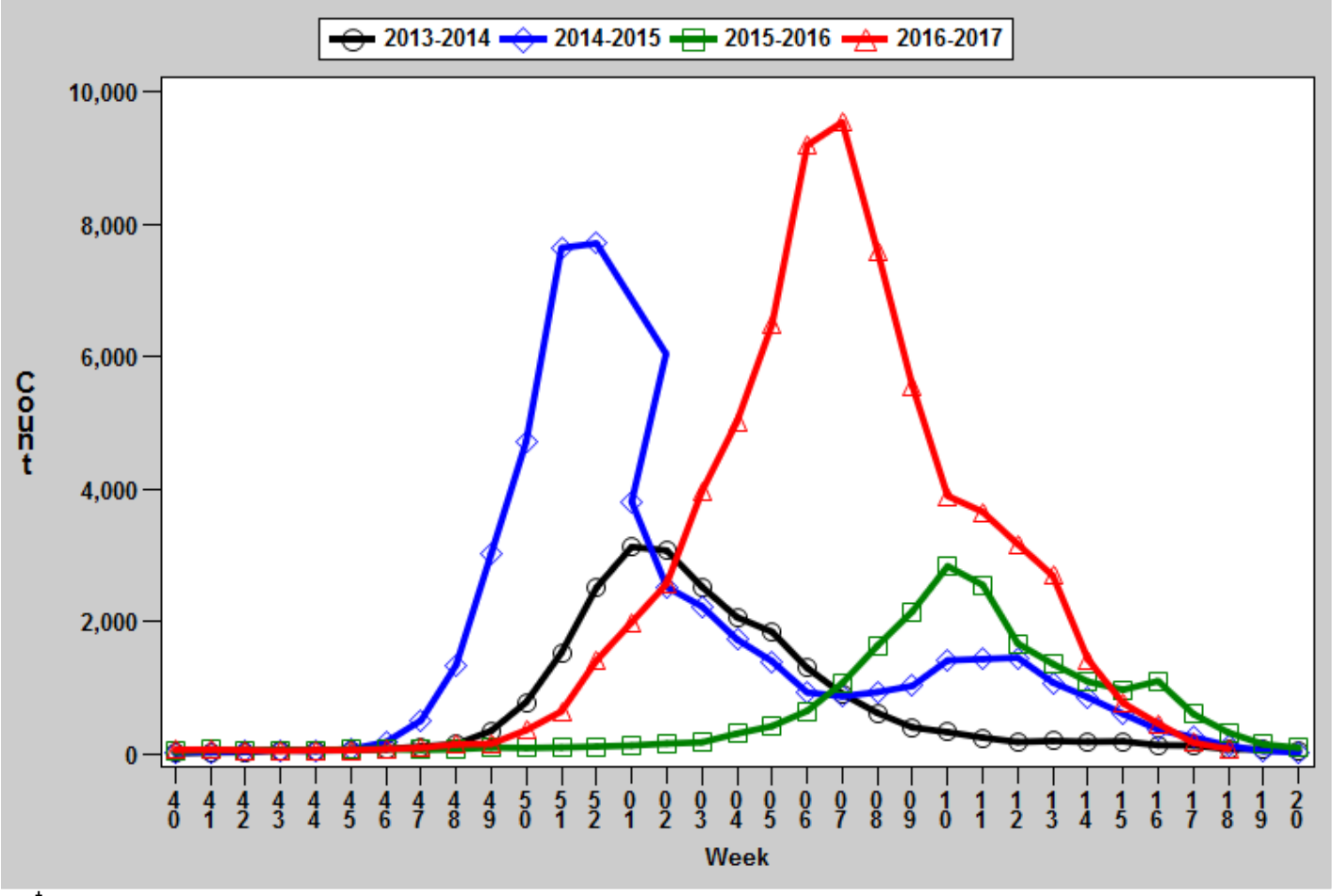
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 18 (April 30 – May 6, 2017)[*‡]

District	Week 18 Cases	Week 18 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	13	2	6,595	996
EA	38	2	22,315	988
NW	11	1	22,452	1,411
SE	3	1	9,921	2,084
SW	6	1	10,010	930
Total	71	1	71,293	1,176

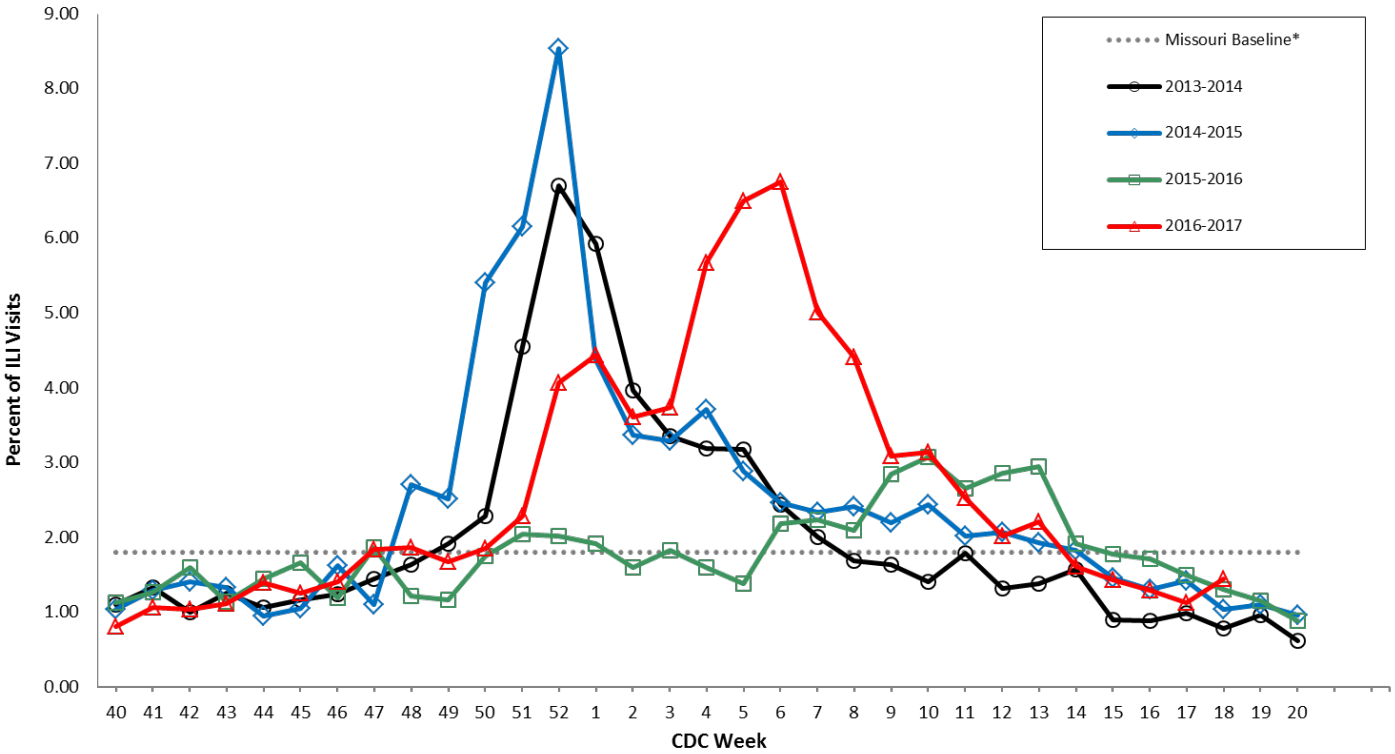
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017[*]



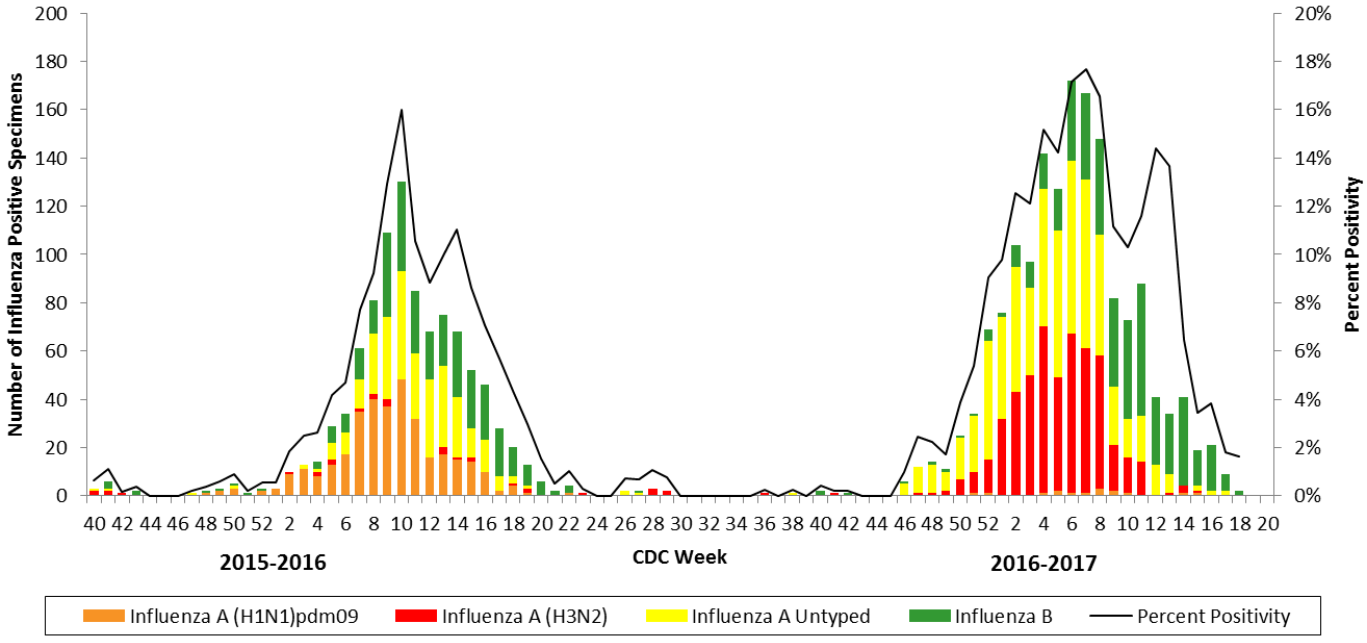
[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



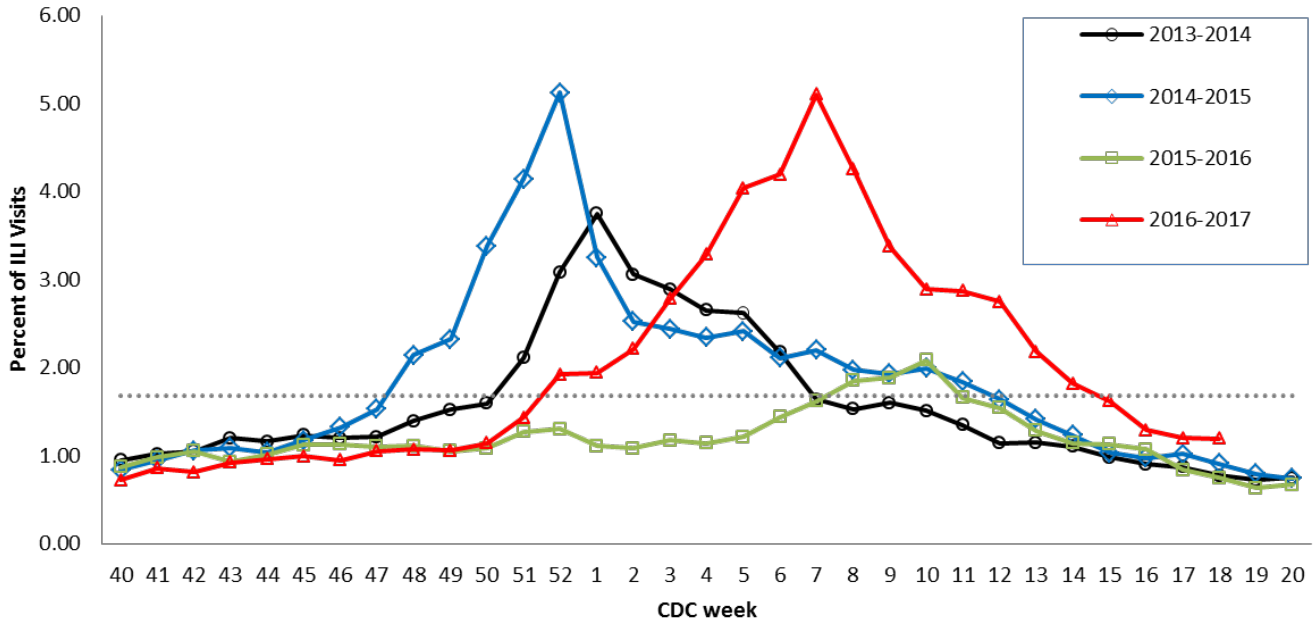
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

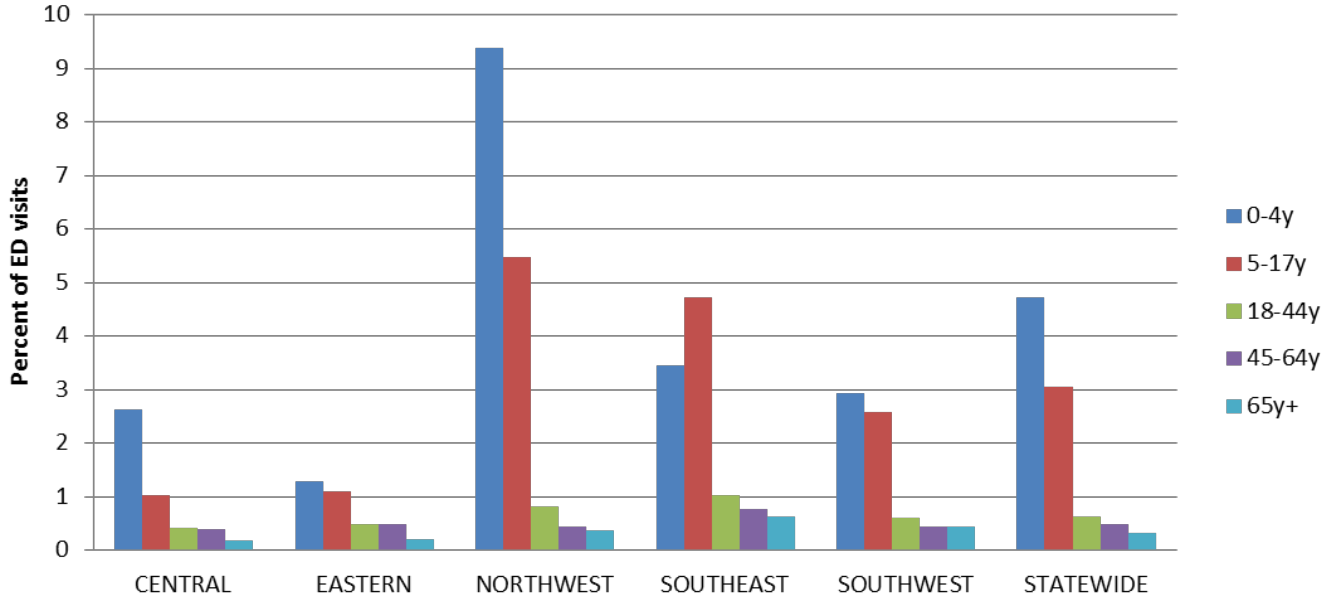
Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†



*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

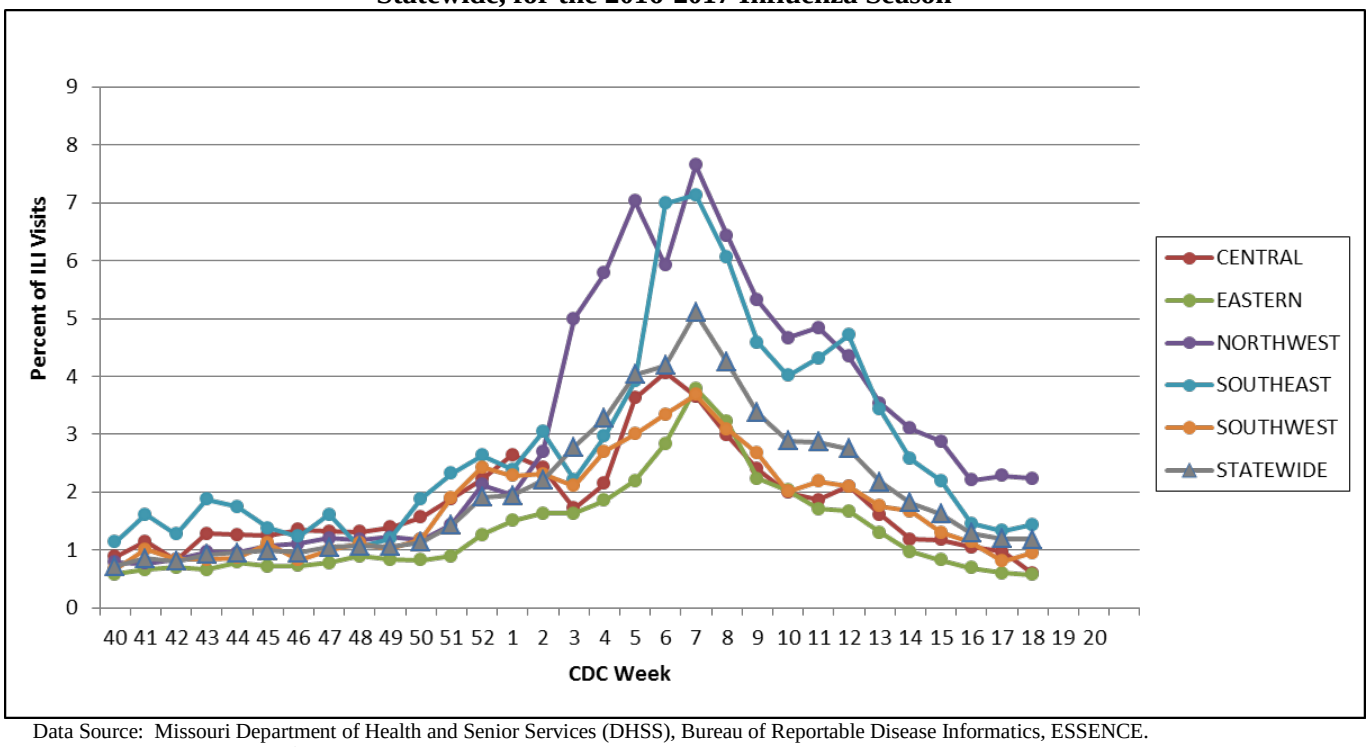
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 18, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*†



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Changes in ILI surveillance for the Northwest District were implemented on January 16, 2017.
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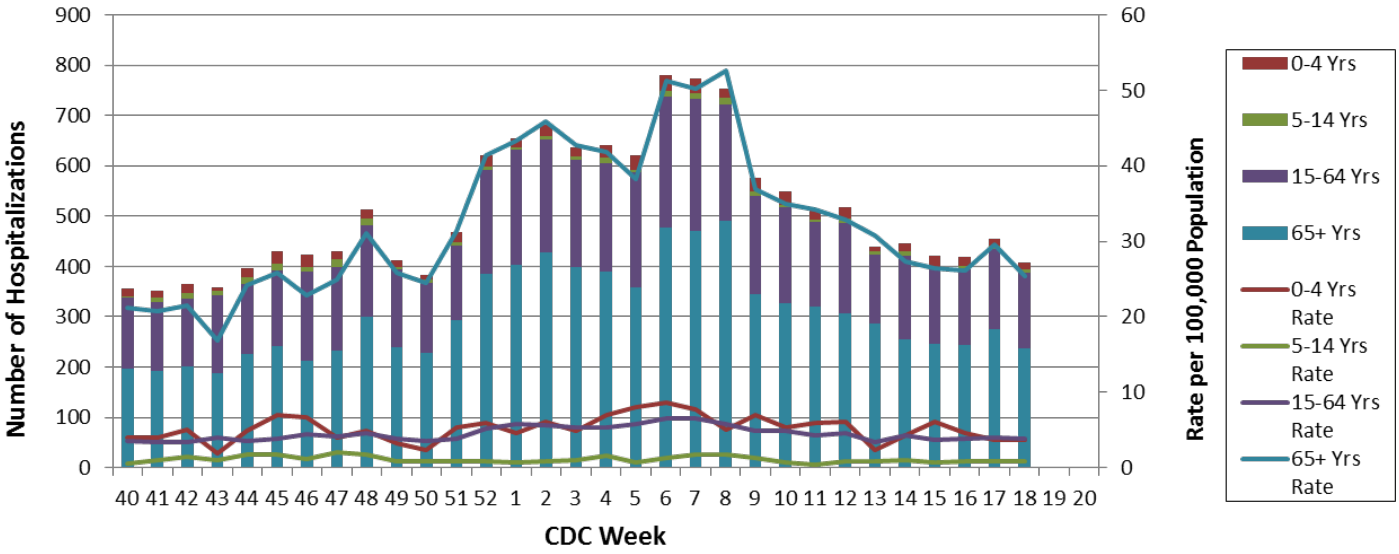
Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 18, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

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http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 19: May 7 – May 13, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Sporadic[2].

- A season-to-date total of 71,419 laboratory-positive[3] influenza cases (45,722 influenza A, 24,435 influenza B, and 1,262 untyped) have been reported in Missouri as of Week 19. The influenza type for reported cases season-to-date includes 64% influenza A, 34% influenza B, and 2% untyped. The highest season-to-date rates of reported laboratory-positive influenza cases are among children aged 0-4 years (2,784 cases per 100,000 population) and 5-14 years (2,517 cases per 100,000). No laboratory-confirmed cases of influenza were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 19.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized 19 influenza isolates from Missouri, to date, this influenza season. Eleven viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus, four viruses were antigenically similar to the B/Brisbane/60/2008-like virus, three viruses were antigenically similar to the B/Phuket/3073/2013-like virus, and one virus was antigenically similar to the A/California/07/2009-like (H1N1)pdm09 virus. An A/Hong Kong/4801/2014-like (H3N2) virus, a B/Brisbane/60/2008-like virus, and an A/California/07/2009-like (H1N1)pdm09 virus are included in the 2016-2017 Northern Hemisphere trivalent and quadrivalent vaccine formulations. A B/Phuket/3073/2013-like virus is included in the 2016-2017 Northern Hemisphere quadrivalent vaccine formulation.

- Influenza-like illness (ILI) activity was below baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 0.88% and 1.07% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories increased slightly during Week 19.

- Ninety-eight influenza-associated deaths have been reported in Missouri as of Week 19. During Week 18, 22 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 2,056 P&I associated deaths in Missouri.[5]

- Forty-six influenza or ILI-associated outbreaks have been reported in Missouri as of Week 19. Eleven influenza or ILI-associated school closures have been reported in Missouri as of Week 19.

- Influenza activity decreased in the U.S. during Week 18. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Sporadic is defined as: Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2pLcrp0. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 19**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 19**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 19 (May 7 – May 13, 2017)*

Influenza Type	Week 17	Week 18	Week 19	2016-2017* Season-to-Date
Influenza A	40	23	20	45,722
Influenza B	130	73	40	24,435
Influenza Unknown Or Untyped	1	0	0	1,262
Total	171	96	60	71,419

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 19 (May 7 – May 13, 2017)*‡

Age Group	Week 19 Cases	Week 19 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	3	1	10,420	2,784
05-14	11	1	19,671	2,517
15-64	27	1	31,921	803
65+	19	2	9,405	1,009
Total	60	1	71,419	1,178

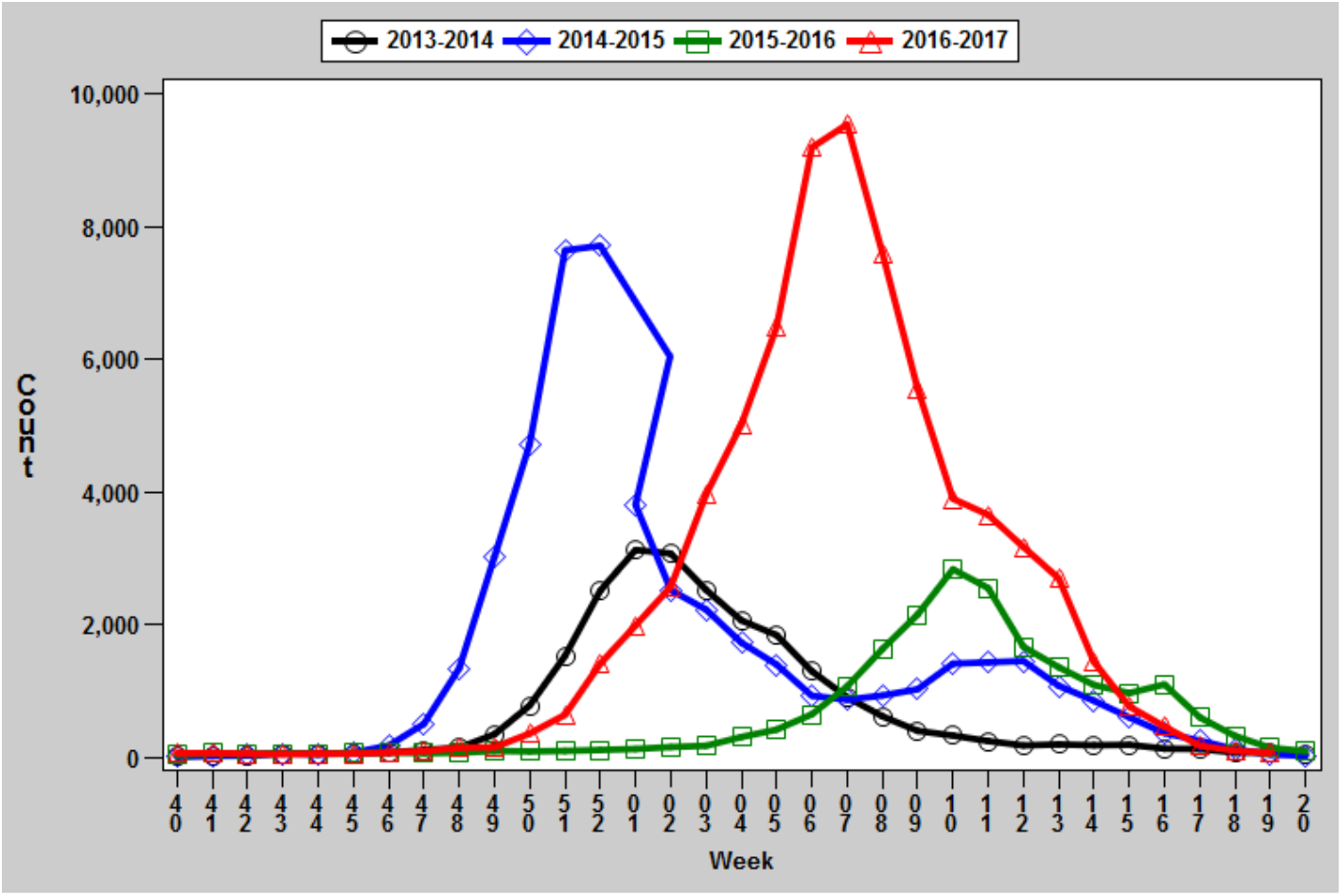
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 19 (May 7 – May 13, 2017)[*‡]

District	Week 19 Cases	Week 19 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	11	2	6,618	999
EA	17	1	22,347	990
NW	6	0	22,462	1,412
SE	1	0	9,934	2,087
SW	25	2	10,058	935
Total	60	1	71,419	1,178

[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017[*]



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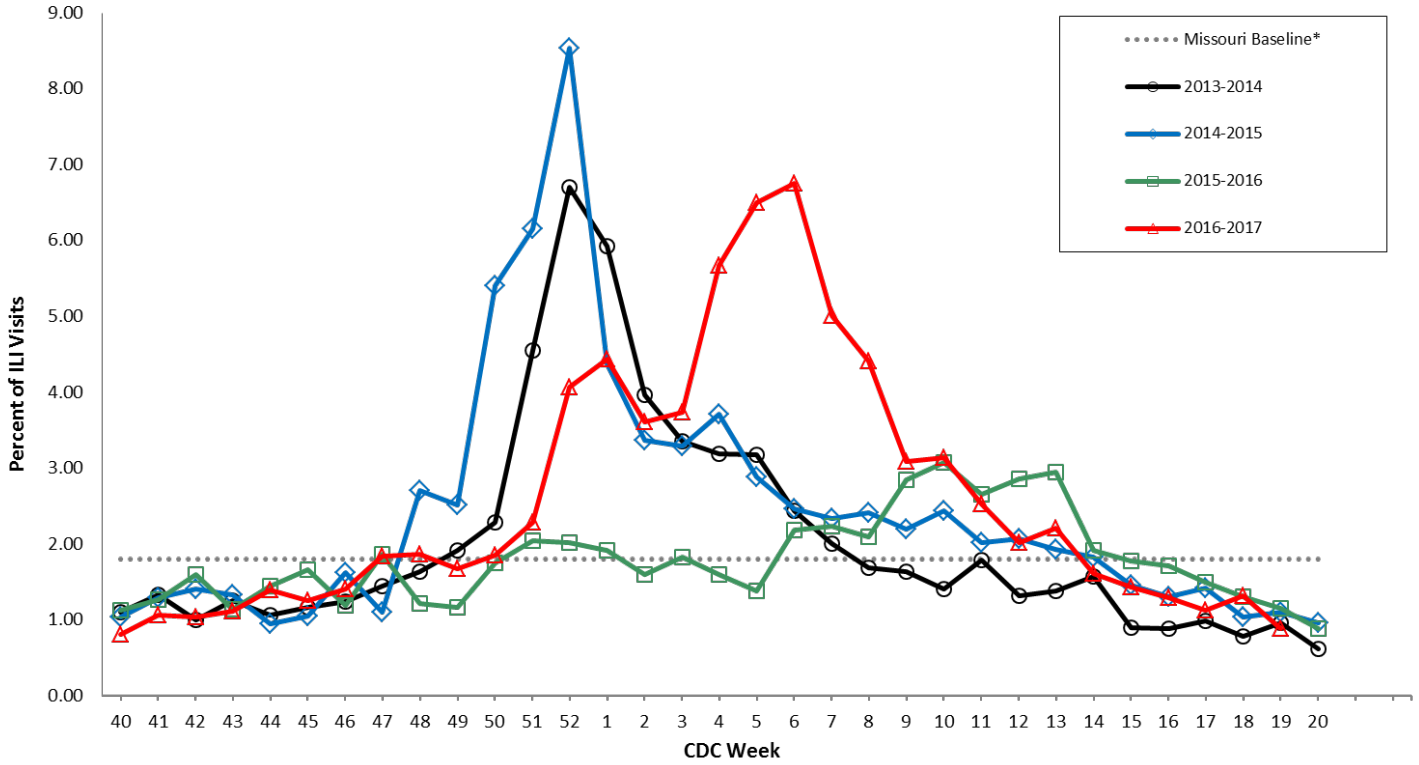
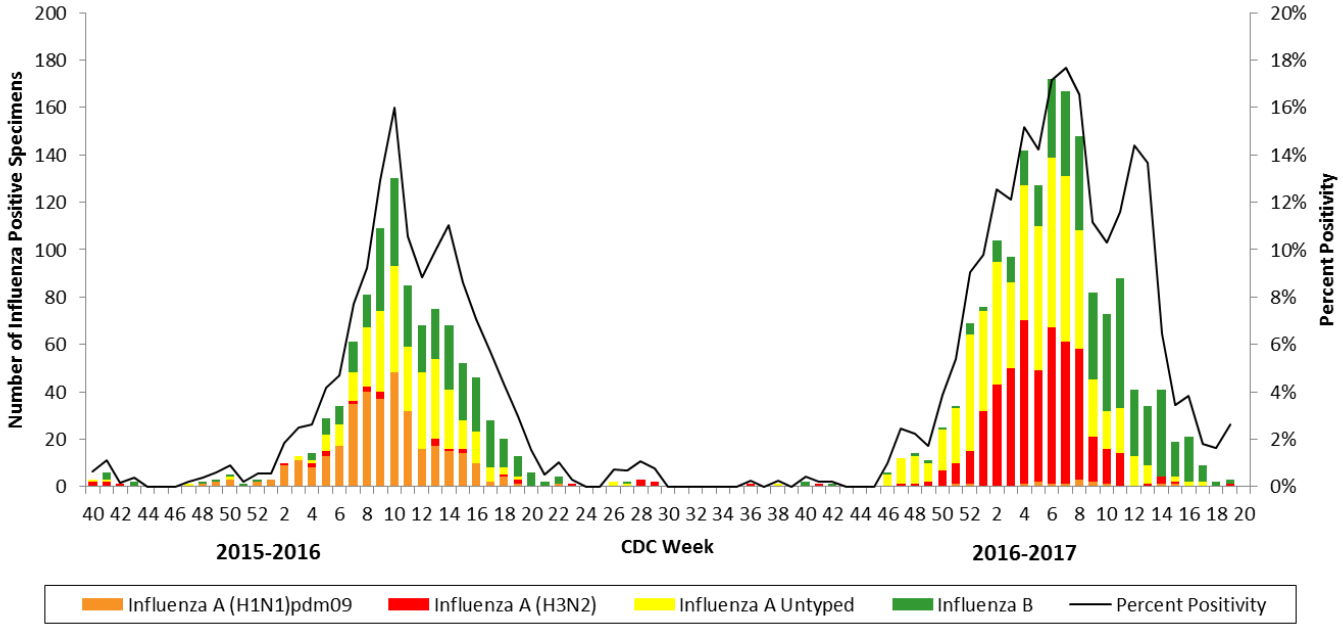
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



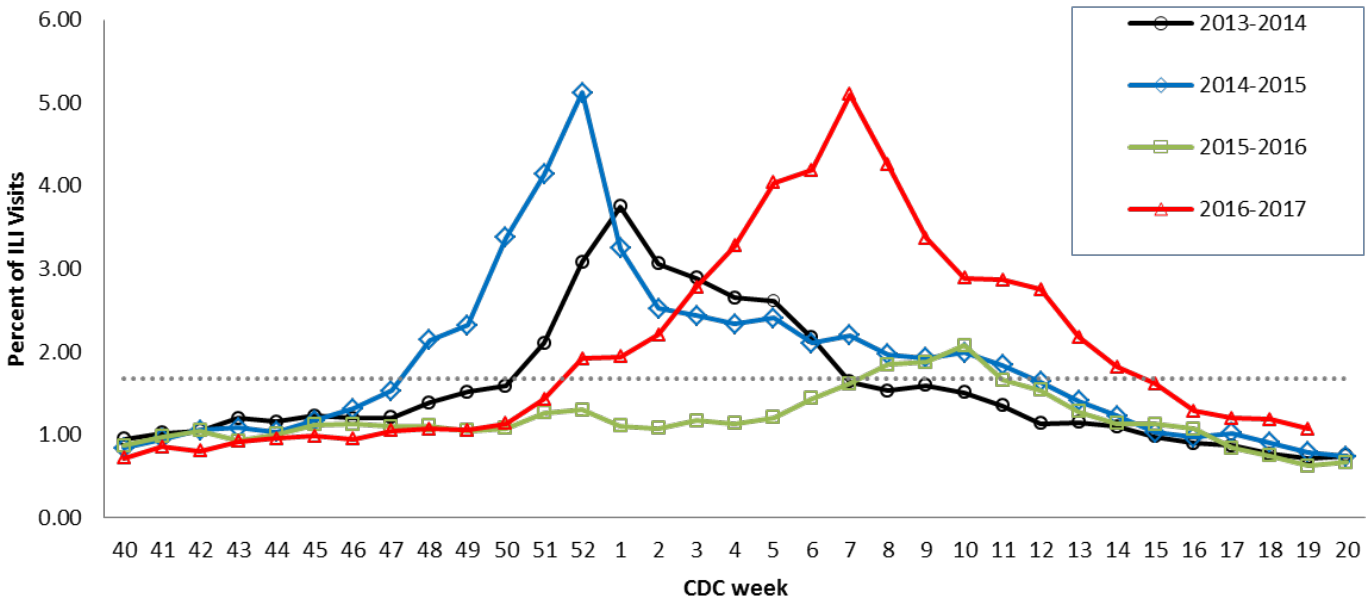
*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



Data Source: National Respiratory and Enteric Virus Surveillance System (NREVSS), Centers for Disease Control and Prevention (CDC).
2016-2017 season-to-date through the week ending May 20, 2017 (Week 20).

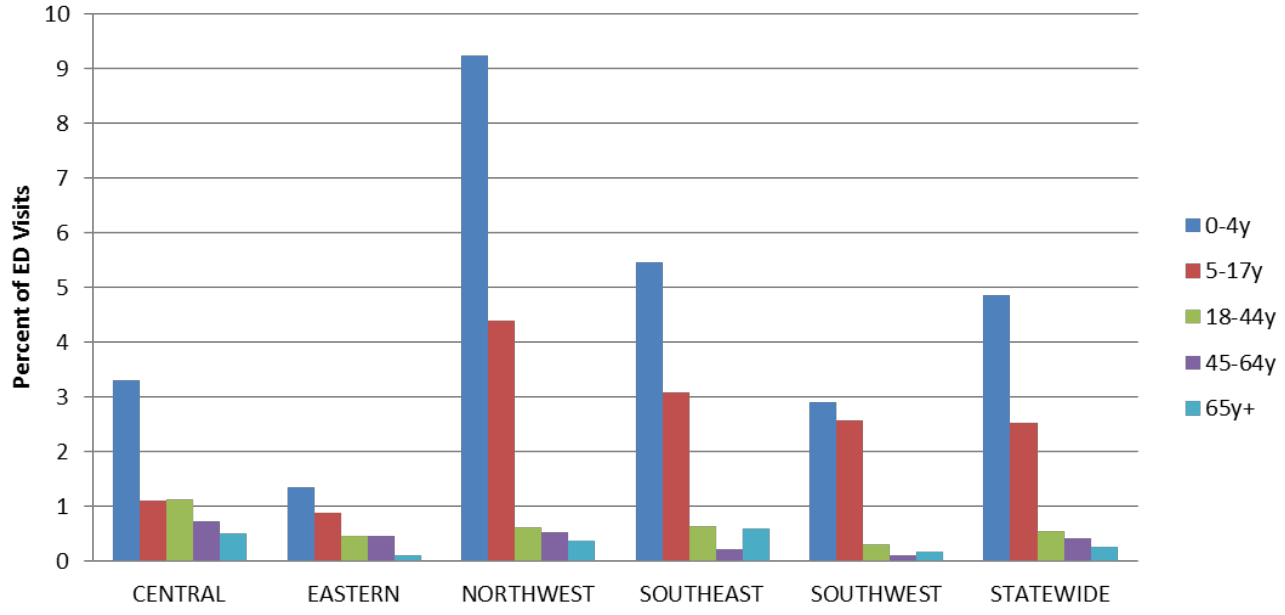
Figure 7. Weekly Percentage of Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, for 2013-2017 Influenza Seasons*†



*The ESSENCE ILI Baseline is the mean percent of ILI visits for each week during the previous three years (2013-15) when percentage of ILI visits were less than 2% of total visits, plus two standard deviations.
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

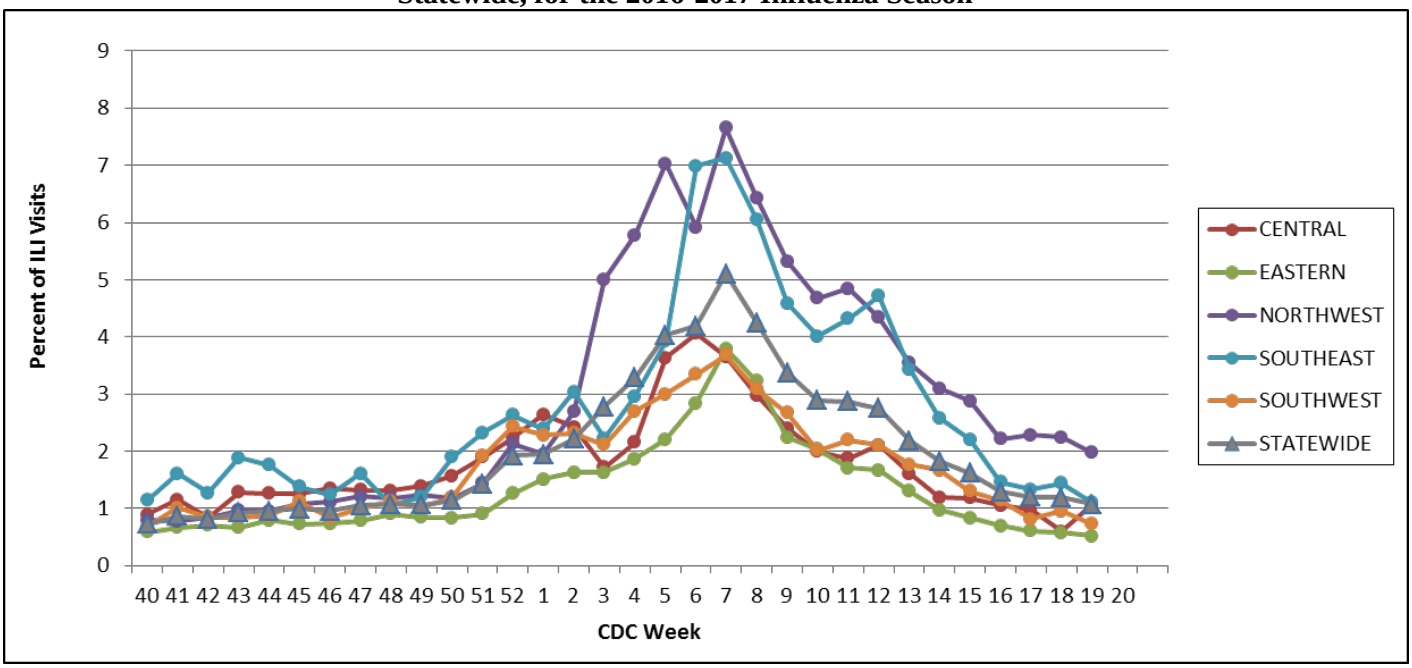
†The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of visits for ILI in ESSENCE participating hospitals during Week 53 was 4.3.

Figure 8. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by Age-group, District and Statewide, CDC Week 19, 2017



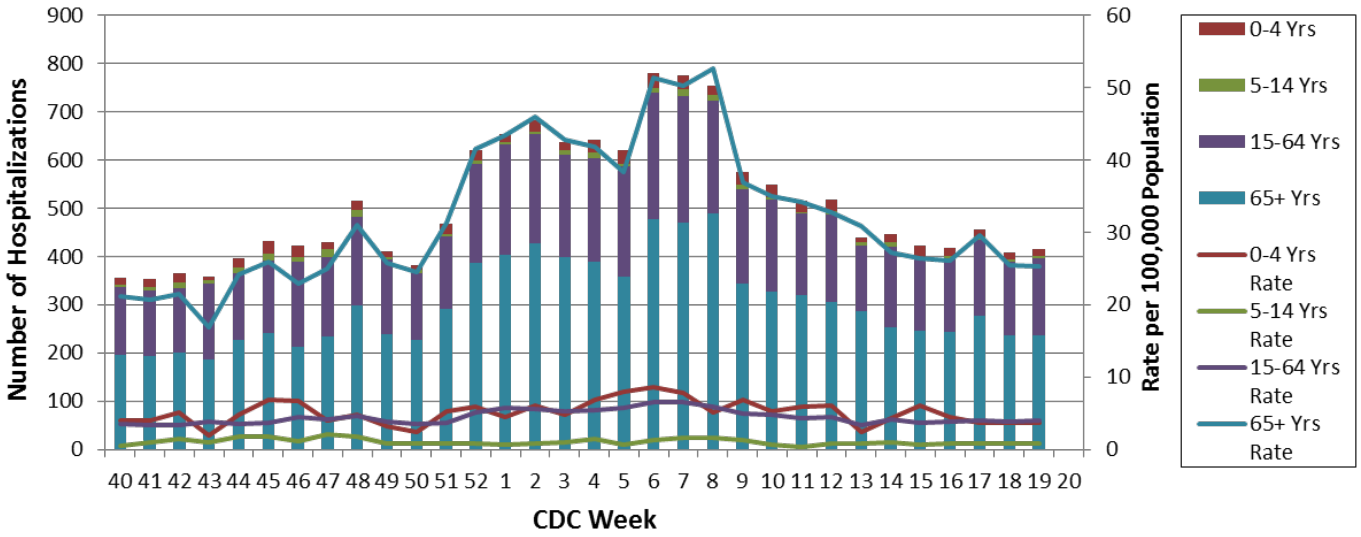
Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.

Figure 9. Percentage of Visits for Influenza-like Illness (ILI) in ESSENCE Participating Hospitals, by District and Statewide, for the 2016-2017 Influenza Season*†



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE.
*Changes in ILI surveillance for the Northwest District were implemented on January 16, 2017.
†Not all data was available for the Northwest District during Week 6.

Figure 10. Patients Hospitalized with Influenza and/or Pneumonia Syndromes from Participating Missouri Hospitals, by Age Group, CDC Week 19, 2017



Data Source: Missouri Department of Health and Senior Services (DHSS), Bureau of Reportable Disease Informatics, ESSENCE. Population data from DHSS Population MICA 2014 (http://health.mo.gov/data/mica/mica/population.php).

Additional Influenza Data Sources:

Centers for Disease Control and Prevention: National Influenza Surveillance (FluView):
http://www.cdc.gov/flu/weekly/fluactivitysurv.htm

The National Respiratory and Enteric Virus Surveillance System (NREVSS):
https://www.cdc.gov/surveillance/nrevss/

World Health Organization: International Influenza Surveillance:
http://www.who.int/influenza/surveillance_monitoring/en/

Missouri Weekly Influenza Surveillance Report
2016-2017 Influenza Season[1]

Week 20: May 14 – May 20, 2017

All data are preliminary and may change as more reports are received.

Summary:

- The estimated influenza activity in Missouri is Sporadic[2].

- A season-to-date total of 71,469 laboratory-positive[3] influenza cases (45,735 influenza A, 24,472 influenza B, and 1,262 untyped) have been reported in Missouri as of Week 20. The influenza type for reported cases season-to-date includes 64% influenza A, 34% influenza B, and 2% untyped. The highest season-to-date rates of reported laboratory-positive influenza cases are among children aged 0-4 years (2,785 cases per 100,000 population) and 5-14 years (2,519 cases per 100,000). No laboratory-confirmed cases of influenza were reported by the Missouri State Public Health Laboratory (MSPHL) during Week 20.

- The Centers for Disease Control and Prevention (CDC) has antigenically characterized 21 influenza isolates from Missouri, to date, this influenza season. Eleven viruses were antigenically similar to the A/Hong Kong/4801/2014-like (H3N2) virus, four viruses were antigenically similar to the B/Brisbane/60/2008-like virus, five viruses were antigenically similar to the B/Phuket/3073/2013-like virus, and one virus was antigenically similar to the A/California/07/2009-like (H1N1)pdm09 virus. An A/Hong Kong/4801/2014-like (H3N2) virus, a B/Brisbane/60/2008-like virus, and an A/California/07/2009-like (H1N1)pdm09 virus are included in the 2016-2017 Northern Hemisphere trivalent and quadrivalent vaccine formulations. A B/Phuket/3073/2013-like virus is included in the 2016-2017 Northern Hemisphere quadrivalent vaccine formulation.

- Influenza-like illness (ILI) activity was below baseline for both the Missouri Outpatient ILI Surveillance Network (ILINet) and the hospital emergency room visit chief complaint data reported through ESSENCE. The reported percentage of visits for ILI was 0.53% and 0.95% through ILINet and ESSENCE respectively.[4] The percentage of respiratory specimens testing positive for influenza in clinical laboratories decreased during Week 20.

- Ninety-nine influenza-associated deaths have been reported in Missouri as of Week 20. During Week 19, 37 deaths involving Pneumonia and Influenza (P&I) were reported to the Bureau of Vital Records, resulting in a season-to-date total of 2,093 P&I associated deaths in Missouri.[5]

- Forty-six influenza or ILI-associated outbreaks have been reported in Missouri as of Week 20. Eleven influenza or ILI-associated school closures have been reported in Missouri as of Week 20.

- Influenza activity decreased in the U.S. during Week 19. National influenza surveillance information is prepared by CDC and is included in the weekly FluView report, which is available online at http://www.cdc.gov/flu/weekly/fluactivitysurv.htm.

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[1]The 2016-2017 influenza season begins CDC Week 40 (week ending October 8, 2016) and ends CDC Week 39 (week ending September 30, 2017).

[2]Sporadic is defined as: Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

[3]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.

[4]Influenza-like illness (ILI) is defined by ILINet as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a known cause other than influenza. Influenza-like illness (ILI) is defined by ESSENCE as Emergency Department chief complaints that contain keywords such as "flu", "flulike", "influenza" or "fever" plus "cough" or "fever" plus "sore throat".

[5]The P&I data are available one week later. The P&I data for the CDC Week provided is the most current data available.

Surveillance Data:

Interactive Maps

The county specific influenza data are provided though interactive maps available at http://arcg.is/2rijRAq. *Click on the county to view the influenza data specific to that county.*

- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, CDC Week 20**
- **Reported Laboratory-positive Influenza Cases by Influenza Type by County, Season-to-Date**
- **Reported Rate per 100,000 Population, CDC Week 20**

Data Figures

Figure 1. Number of Laboratory-positive† Influenza Cases by Influenza Type, Missouri, CDC Week 20 (May 14 – May 20, 2017)*

Influenza Type	Week 18	Week 19	Week 20	2016-2017* Season-to-Date
Influenza A	24	24	7	45,735
Influenza B	75	54	21	24,472
Influenza Unknown Or Untyped	0	0	0	1,262
Total	99	78	28	71,469

†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 2. Number of Laboratory-positive† Influenza Cases and Case Rates by Age Group, Missouri, CDC Week 20 (May 14 – May 20, 2017)*‡

Age Group	Week 20 Cases	Week 20 Rate‡	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate‡
00-04	2	1	10,426	2,785
05-14	9	1	19,683	2,519
15-64	12	0	31,944	803
65+	5	1	9,414	1,010
Total	28	0	71,469	1,179

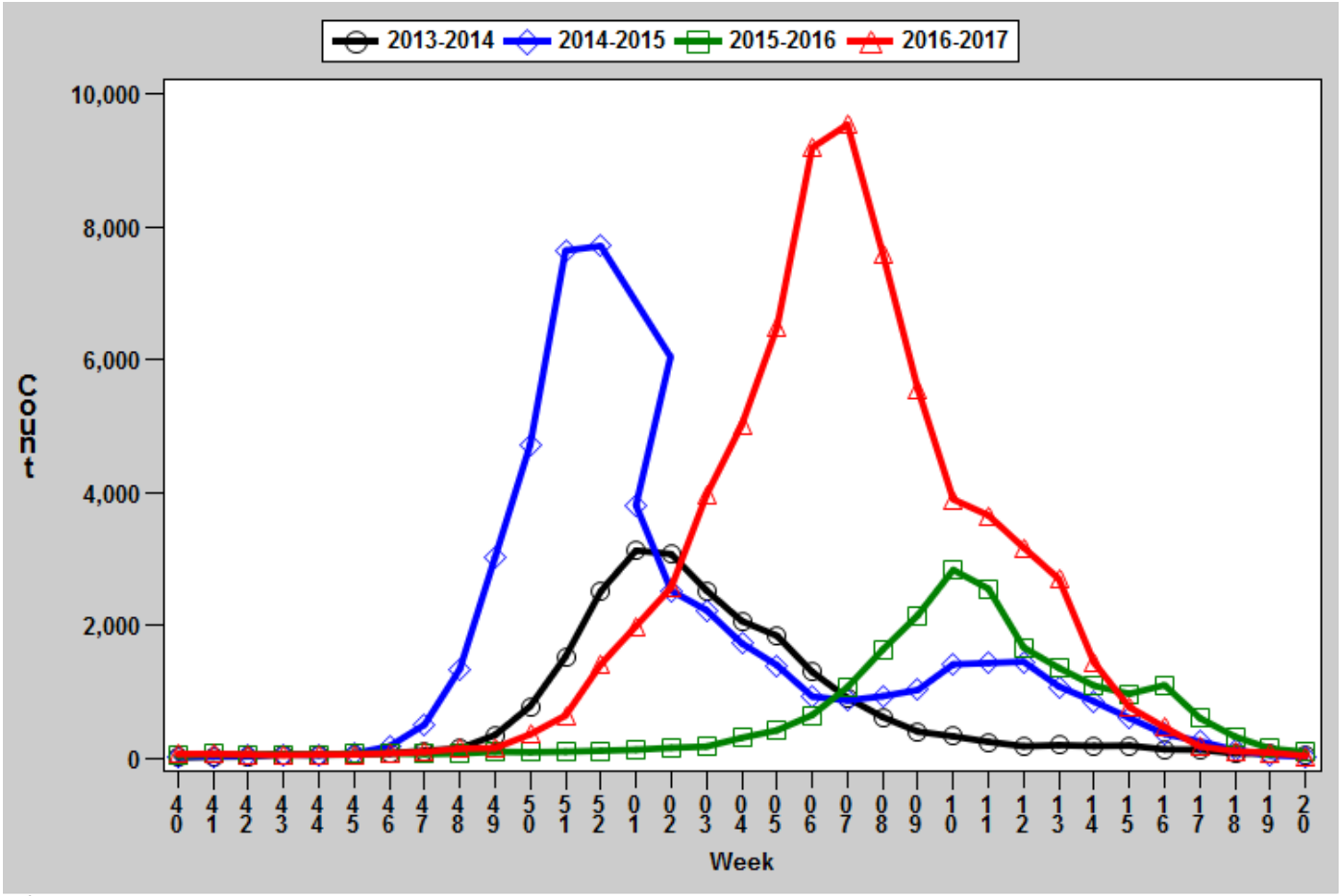
†Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
‡Incidence Rate per 100,000 population

Figure 3. Number of Laboratory-positive[†] Influenza Cases and Case Rates by Region, Missouri, CDC Week 20 (May 14 – May 20, 2017)[*‡]

District	Week 20 Cases	Week 20 Rate[‡]	2016-2017* Season-to-Date	2016-2017* Season-to-Date Rate[‡]
CE	5	1	6,623	1,000
EA	18	1	22,373	991
NW	0	0	22,467	1,412
SE	2	0	9,942	2,088
SW	3	0	10,064	935
Total	28	0	71,469	1,179

[†]Laboratory-positive influenza includes the following test methods: rapid influenza diagnostic tests (antigen), reverse transcriptase polymerase chain reaction (RT-PCR) and other molecular assays, immunofluorescence antibody staining (Direct (DFA) or Indirect (IFA)), or viral culture.
*Influenza season begins week ending October 8, 2016 (CDC Week 40) Data Source: Missouri Health Information Surveillance System (WebSurv)
[‡]Incidence Rate per 100,000 population

Figure 4. Number of Laboratory-positive[†] Influenza Cases by CDC Week, Missouri, 2013-2017[*]



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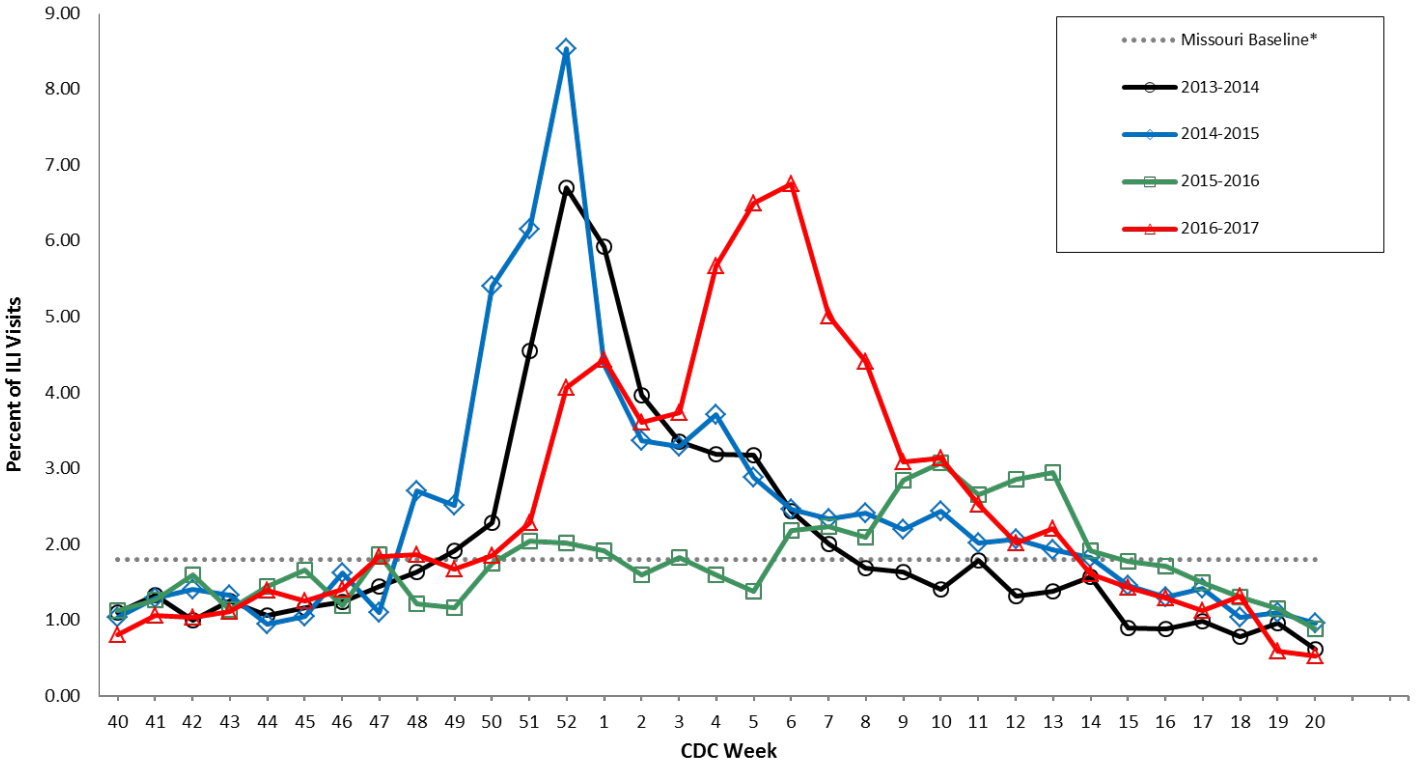
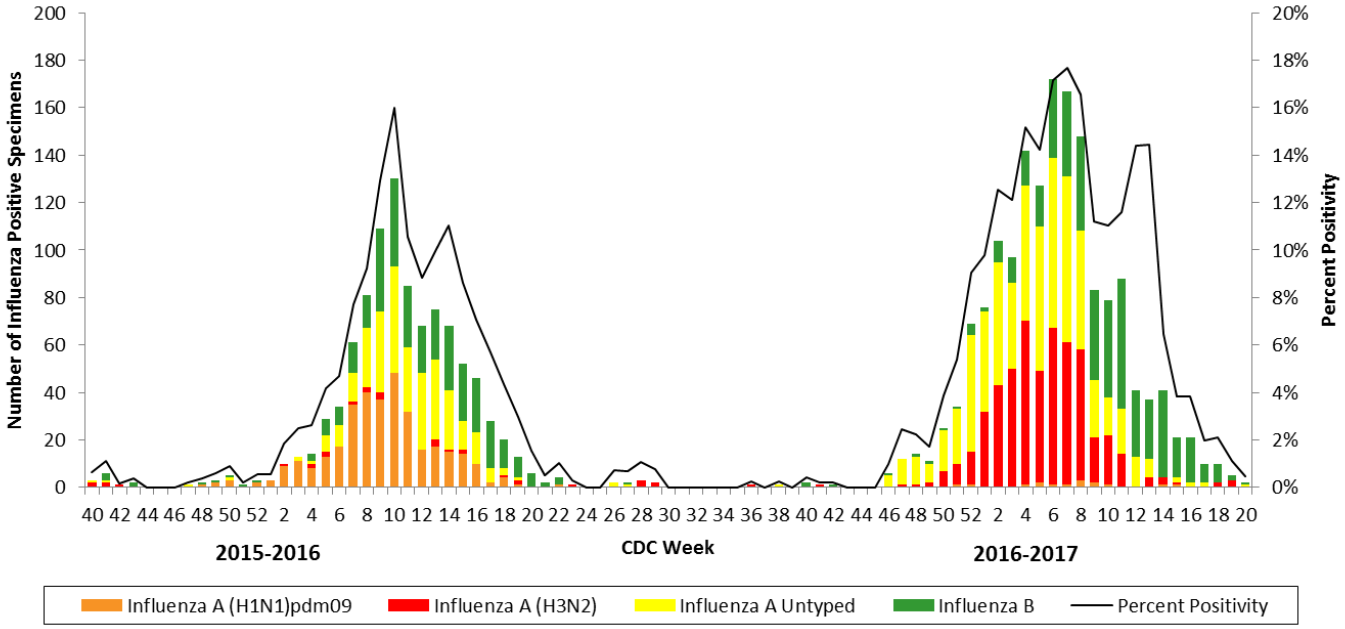
*2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. Week 53, 2014-2015 flu season has 3,082 reported confirmed cases. Data Source: Missouri Health Information Surveillance System (WebSurv).

Figure 5. Percentage of Outpatient Visits for Influenza-like Illness (ILI), Missouri Outpatient ILI Surveillance Network (ILINet) 2013-2017*†



*The ILINet Region 7 (MO, IA, KS, NE) baseline is the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons, plus two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza.
Data Source: U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet), Centers for Disease Control and Prevention (CDC).
†2016-2017 season-to-date through the week ending May 20, 2017 (Week 20). The 2014-2015 season had 53 weeks rather than the usual 52. The percentage of outpatient visits for ILI during Week 53 was 7.63.

Figure 6. Season-to-Date PCR (+) Tests for Influenza in Missouri



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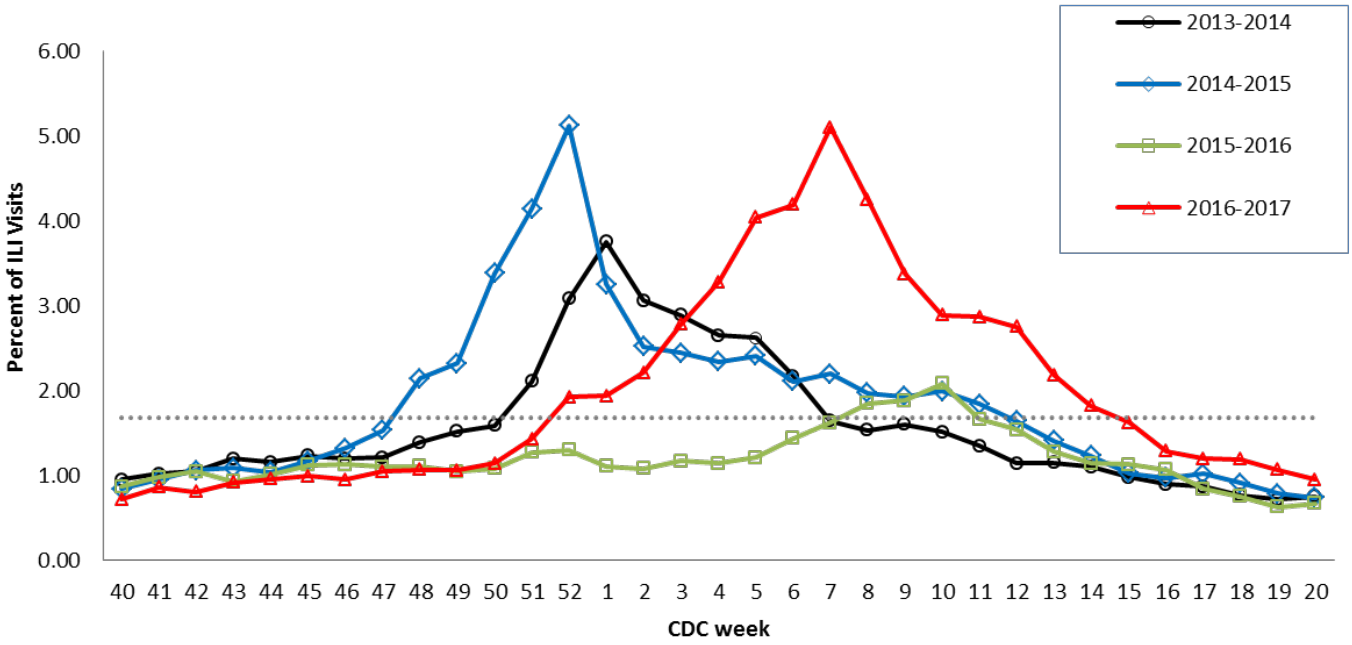

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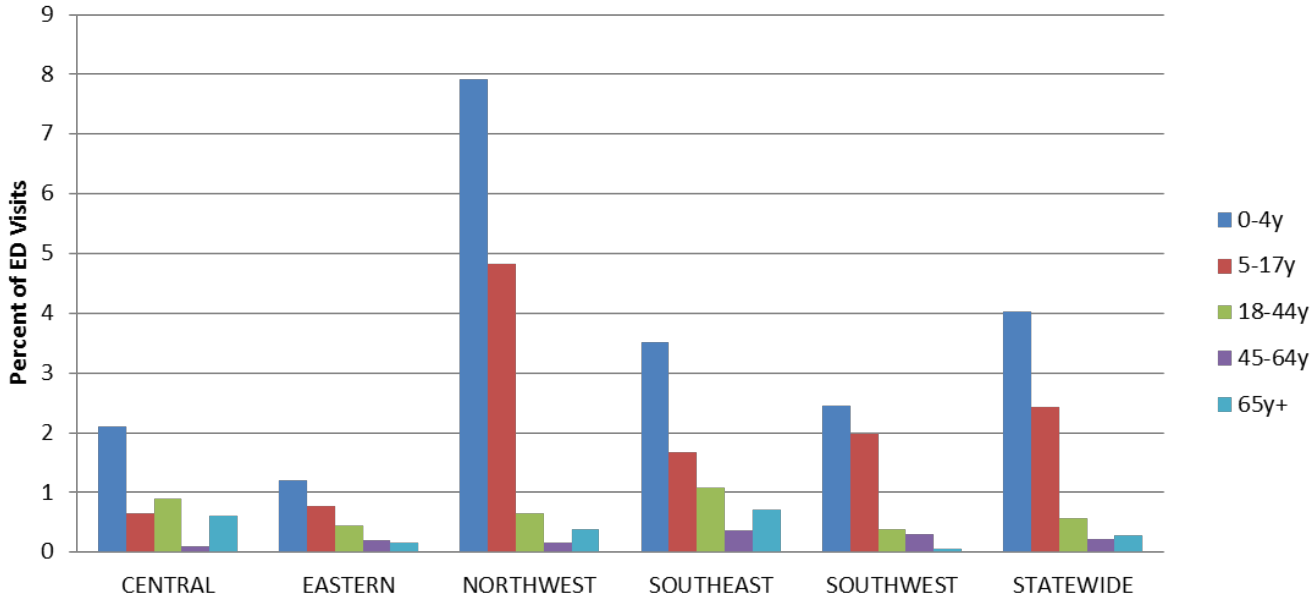

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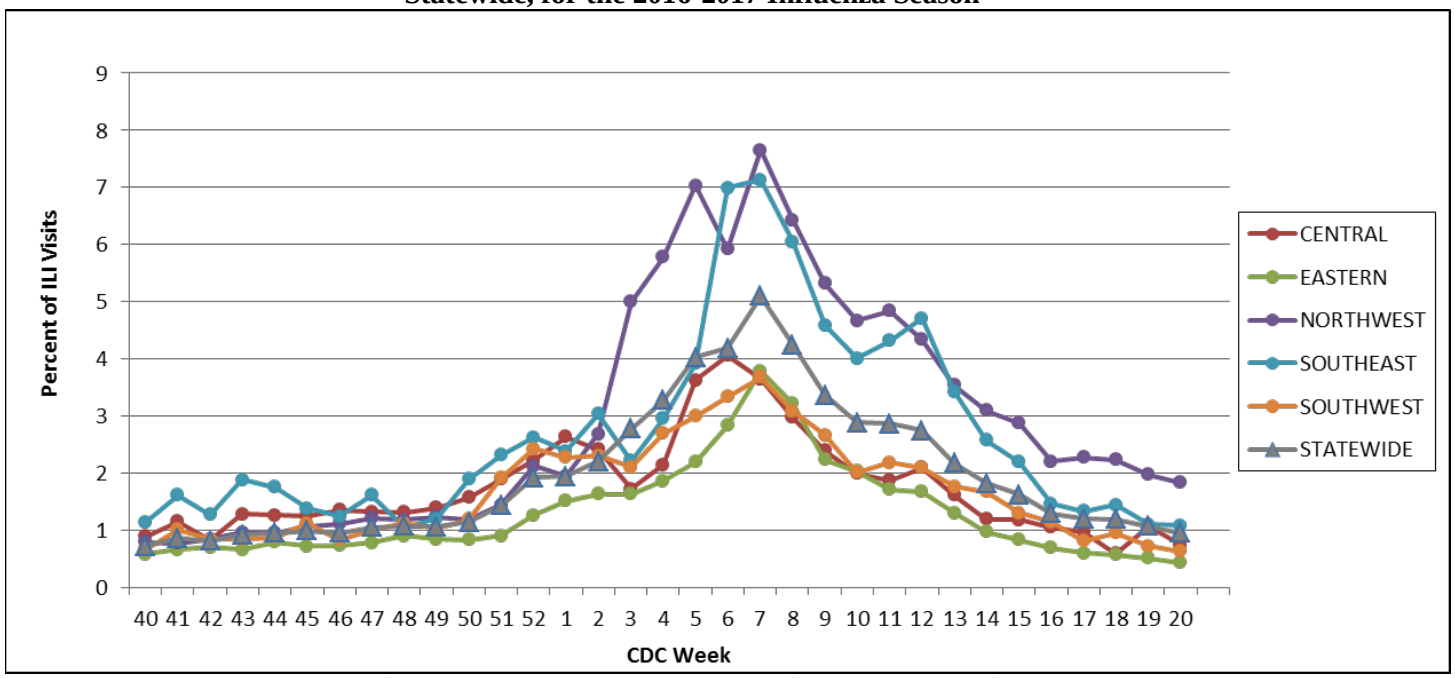

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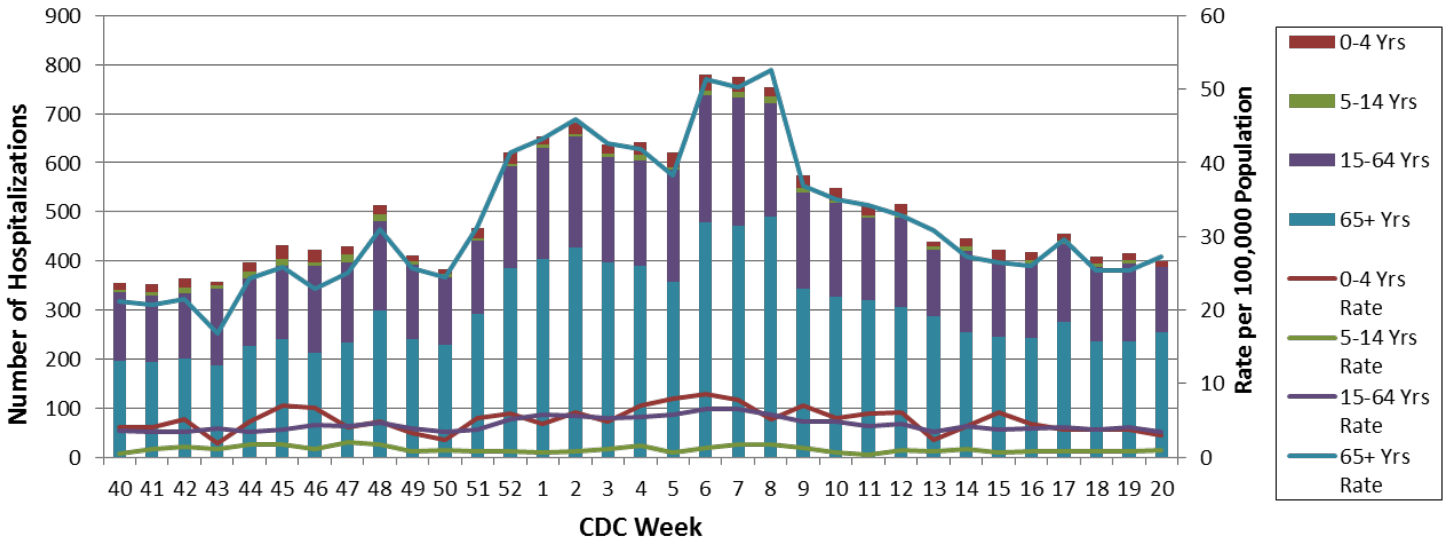

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